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California
Public Utilities Commission
Energy Division—
NGEERA Branch

Energy Efficiency Proposal
San Diego Gas & Electric Region
Industrial Manufacturer's
Business Assessment of
Energy (Energy MBA) Program

Submitted By:

 **Nexant**

and

 **ENVINTA™**

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I.A Program Concept

Nexant and EnVINTA propose a Manufacturers' Business Assessment of Energy Program (Energy MBA) that will improve the energy performance of manufacturers, driven through changes in business policies and practice. This classical approach to drive continuous improvement in other management disciplines has only been used for energy management in the last few years, with great effect. It is an opportune time to introduce this approach to the California manufacturing sector, which has not been penetrated very effectively by demand-side management programs to date, particularly in hard-to-reach process energy intensive sectors.

Energy MBA is submitted as an information program that will generate and sustain practical energy savings over time. The Program targets senior management of industrial manufacturers and facilitates their participation in a management diagnostic process to identify opportunities to improve their business energy practices and benchmark their companies with similar firms. Industrial participants will be coached to define business changes and energy savings that can be implemented in their first 180-day plan. Senior management will be asked to commit to implementing an action plan to improve management policies and practices and short-term operations-related energy improvements, as well as to identify and undertake longer-term process-related energy projects. Industrial participants are expected to repeat the planning cycle, continuously identifying opportunities to improve management practices and realize energy savings in subsequent 180-day implementation plans. The Program reduces key market barriers in underserved industrial market segments in the following ways:

- Gains senior management understanding and commitment to improve energy usage
- Uses a business-based (rather than primarily technical) approach to define key priorities for improving energy use
- Provides a process to link priority user needs with the most appropriate DSM programs and other services. This allows for an account-managed approach to DSM, which delivers only those services the company needs—*at the time of need*—and evolves as the needs change.
- Builds internal competency in businesses to manage their own energy costs and ensure that savings are sustained.
- Captures comprehensive benefits including measurable savings through capital investment in energy-efficient equipment and process improvements, as well as through improved plant operations and maintenance.
- Establishes a continuous improvement approach that integrates energy into quality and other existing business systems, and makes energy management part of the company's business activities.

In addition, Energy MBA will connect participants and their industrial sectors to existing statewide program offerings to promote broader and deeper participation of the State's leading industries in transforming business energy practices.

I.B Program Rationale

There is a clear justification for a new industrial sector approach in California. The State’s industrial energy consumers with electric demands of more than 500 kW represent 6 percent of industrial sites and account for more than 70 percent of industrial electricity consumption. Yet their potential for energy savings remains largely untapped and is not squarely targeted by existing California statewide programs. A recent study in fact found that less than 20 percent of electrical and 5 percent of gas energy savings potential had been realized.¹ As illustrated in Table I-1, the remaining potential comprises more than 3000 GWh and nearly 500 MTh of savings. To increase the realization rate of this huge potential savings pool, the Energy MBA program specifically targets industrial energy consumers—with a focus on process energy intensive industries in the State. In San Diego, we will initially target pharmaceutical manufacturers (food and chemicals sectors), industrial machinery, and electronics companies that represent significant electric and gas savings potential in the San Diego region.

Table I-1: Summary of California Energy-Efficiency Savings Potential

Industry Category	Electric Potential – GWh					Gas Potential – Mth			
	Motors	Lights	Space Cooling	Total Electric	% of Industry Total	Boilers	Process Heat	Total Gas	% of Industry Total
20 Food	320	54	54	374	12%	101	13	114	25%
21 Tobacco	-	-	-	0	0%	-	-	0	0%
22 Textiles	28	6	5	34	1%	13	2	16	3%
23 Apparel	14	8	14	22	1%	0	0	1	0%
24 Lumber	84	12	9	96	3%	4	2	6	1%
25 Furniture	21	9	9	30	1%	0	0	1	0%
26 Paper	148	21	24	169	6%	54	5	59	13%
27 Printing	74	23	42	97	3%	1	1	2	0%
28 Chemicals	222	24	9	245	8%	24	5	30	6%
29 Petroleum	338	11	9	349	11%	95	66	161	34%
30 Rubber/Plastics	175	29	18	204	7%	4	1	5	1%
31 Leather	1	-	-	1	0%	0	0	0	0%
32 Stone/Clay/Glass	312	38	21	350	11%	95	66	161	34%
33 Primary Metals	112	21	13	133	4%	4	10	14	3%
34 Fab Metals	122	35	35	156	5%	4	5	9	2%
35 Ind Machinery	154	85	57	239	8%	4	1	5	1%
36 Electronics	160	88	91	248	8%	6	3	8	2%
37 Transp Equip	88	67	85	155	5%	7	2	9	2%
38 Instruments	75	54	24	129	4%	3	0	4	1%
39 Misc. Manuf.	15	9	12	25	1%	0	0	1	0%
Total	2,463	594	519	3,057	100%	330	136	466	100%

Source: California Industrial Energy Efficiency Market Characterization Study. Xenergy, 2001.

Process end uses consume the vast majority of industrial energy (as illustrated in Figure I-1); however, existing DSM programs have been largely ineffective at improving the efficiency of process energy use.² A recent study concluded that current statewide programs “tend to favor

¹ Xenergy, Inc. 2001. *California Industrial Energy Efficiency Market Characterization Study*. Prepared for PG&E.

² Ibid.

equipment change-outs [that] will continue to miss opportunities to improve the energy efficiency of industrial systems.”³

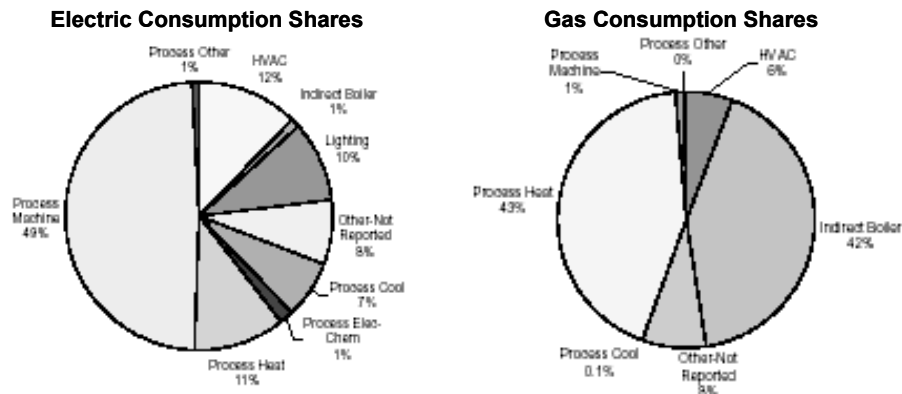


Figure I-1: End-Use Breakdowns of Manufacturing Consumption

The Nexant team’s innovative Energy MBA Program’s design focuses on changes in business practices to directly overcome key market barriers in underserved industrial market and assisting companies to address their process energy savings potential. The Program will result in increased identification and implementation of energy savings opportunities for participants and increased uptake of other statewide and local program offerings to nonresidential consumers. Table I-1 illustrates how the expected program outcomes differ from the status quo of traditional utility programs.

Table I-2 Comparison of Energy Efficiency Program Outcomes

Industrial Energy Savings Outcomes	Traditional Utility Programs	Energy MBA Program
Short-term O&M Improvements in Energy Use	-	●
Continuous O&M Improvements in Energy Use	-	●
Energy-Efficient Hardware Retrofits	○	●*
Capital Investments in Long-term Process Energy Savings	-	●

* Although the Program does not offer retrofit incentives, it enhances participation in traditional retrofit rebate programs by making industrial customers *more* likely to install equipment retrofits and apply for rebates as a *direct result* of participation in Energy MBA.

The following discussion summarizes the Program’s approach in each of the evaluation criteria identified in Decision 03-08-067 as most relevant to information programs.

³ Ibid.

I.B.1 Ability to Overcome Market Barriers

The Energy MBA Program addresses the major market barriers to achieving substantial, cost-effective energy savings by industrial customers. More traditional programs do not generally address these key market barriers. Existing DSM program offerings generally aim to reduce market barriers in the industrial sector through equipment rebates to apply monetary incentives to buy down the implicit costs of a variety of these barriers. For example, the recent proposal to raise rebate levels with the aim of increasing participation rates in the Express Efficiency Program suggests that rebates are considered precisely in this way.⁴ This traditional approach has a fundamental shortcoming in that it directly acts on only one type of market barrier—financial hurdles—and only indirectly (if at all) addresses other important barriers. This is an especially important consideration in designing programs that seek to serve large businesses, for whom access to modest amounts of capital is often not the major market barrier. Further, the traditional approach misses the greatest savings opportunities in industry, which is improving processes through capital, operational, and maintenance improvements, all of which have energy as well as other business benefits.

This Program counters other more important market barriers in the industrial market segment. These market barriers include the following:⁵

- **Organization practices or customs** that inhibit managers from improving energy performance: The achievement of effective energy savings depends on a range of critical business aspects including:
 - Corporate commitment from top management level down—the *key* direct barrier that should be addressed in industrial programs
 - Fundamental issues such as poorly defined accountability, adequate resources, and competency
 - Capital purchasing policies
 - Operating and maintenance procedures designed to achieve energy-efficient outcomes in routine operations
 - Monitoring and reporting systems, and many others.

The Energy MBA Program addresses all of these barriers. It does so by directly engaging the company from high-level management down to providing strategic guidance, as well as tactical assistance, to integrate efficient energy management practices into corporate business practices. It assists each company to prioritize barriers to be removed so managers can incrementally and continuously improve by addressing those practices that will have the greatest impact at the time.

⁴ July 30, 2003 utility request in R.01-08-028 to increase Express Efficiency Program rebate levels on the basis of an “approach that essentially involved modeling market response based upon rebate prices.”

⁵ Nexant’s description of relevant market barriers is consistent with the taxonomy developed in “*Scoping Study on Energy Efficiency Market Transformation by California Utility Demand-Side Management Programs*,” Eto, Prah, and Schlegel, Lawrence Berkeley National Laboratory, 1997.

- **Misplaced or split incentives** that create trade-offs when managers pursue energy projects: In the targeted market segments, this barrier is reflected in the practices of capital budget managers, whose performance incentives often focus on output. Such metrics put them at odds with industrial facility managers, whose performance incentives might (but often do not) include more energy-efficient operations.⁶ The Program addresses this barrier through management diagnostics and site assessments, which the improvements in productivity and bottom-line economics available by aligning corporate performance metrics.
- **Information costs and performance uncertainties** that prevent managers from including energy in business analyses: Energy MBA addresses this key issue directly. Senior managers of industrial companies often have never met to discuss energy as a business issue. The Nexant team has proven that we can rapidly bring energy to the attention of senior managers to stimulate commitment to change. By bringing expert services directly to decision makers at key levels of corporate and line management, the Program minimizes information search costs as well as the market barrier costs of addressing performance uncertainties.

I.B.2 Equity

As noted above, California's existing statewide nonresidential program do not accurately target the needs of industrial energy consumers, particularly process and manufacturing industries. The Energy MBA Program concept addresses this imbalance by targeting the hard-to-reach energy savings potential of process industries. The Program concept has the support of the San Diego Industrial Environmental Association (IEA), the San Diego Regional Energy Office (SDREO), and the California Manufacturers and Technology Association.

Existing DSM programs are particularly inefficient at reaching the process energy intensive industries, such as pharmaceuticals/chemicals industry, or the food industry (SIC 20) whose members did not, for example, participate in or receive *any* rebates in the statewide 2002 Express Efficiency program.⁷ Food processors, like fruit and vegetable, meat, poultry, dairy, wineries, etc., are located in geographically hard-to-reach communities (i.e., outside the major metropolitan areas) and have the largest share of electricity savings potential of any two-digit industry and second largest share of gas potential (behind only petroleum) in California.⁸ That is, even though it has the highest potential for energy savings, it presently receives few program services *because* it is hard to reach.

As the Energy MBA team delivers assistance to targeted process industries, we will extend Program resources to seek participation from other industries in the communities we are serving.

⁶ Energy-efficiency studies are rife with examples symptomatic of this barrier: industrial facilities that have identified, but not implemented, multiple energy-efficiency opportunities. The evaluation of Nonresidential Standard Performance Contract programs, for example, indicates that 60% of large utility customers exhibit this symptom.

⁷ July 30, 2003 utility request in R.01-08-028 to increase Express Efficiency Program rebate levels.

⁸ Xenergy, Inc. 2001. *California Industrial Energy Efficiency Market Characterization Study*. Prepared for PG&E.

By addressing corporate management and facility-specific technical issues, the Program maximizes realization of savings in both process improvement opportunities and operations.

I.B.3 Innovation

The Energy MBA Program is an innovative approach to encourage industrial customers to make changes in their business practices to generate immediate operations-related energy savings and drive continuous improvement in energy performance. This will deliver comprehensive energy savings, including hard-to-reach process technology improvements (which tend to have much longer planning and project timeframes and generally require intimate involvement of the companies themselves in making change as these processes are core to their businesses).

Innovative aspects of the Energy MBA Program include:

- Use of a management diagnostic process to engage customers and plan business improvement actions
- Best practices benchmarking against 1000 companies who have utilized this process
- Continuous improvement approach (implementing the “energy chapter” in their quality program)
- Comprehensive coverage and implementation support including all forms of savings
- Use of coaching and competency building (and complementing technical support) to assist companies to improve. This approach builds capability rather than ongoing dependency.
- High level of involvement of industry associations to market the process and outcomes
- Engagement of a range of trade allies to support delivery of ongoing outcomes

A key to success of the Program is a structured approach to diagnosing corporate management practices, facilitated by use of a continuous improvement process (developed and championed by EnVinta and delivered by the Nexant team). This process is proven for engaging senior management commitment and support, while providing the awareness, education, and competitive benchmarking analysis needed to drive behavioral changes and promote new policies and practices. EnVinta has demonstrated its effectiveness in pilot programs, and the Nexant team will implement the Program on a larger scale in California, where it is truly innovative addition to traditional DSM activities. Knowledgeable industry managers, however, will recognize the fundamental structure and approach of the Program as standard “best practice” in the fields of quality, safety, environmental, and plant reliability management. As a result, the approach is very readily incorporated into most industries.

The Energy MBA Program is innovative in seeking to reduce barriers to energy efficiency within management structures, and by doing so achieve market transformation with the industrial manufacturing sector. The program works to change the market from the demand side—from *within each organization*—whereas traditional programming (to the extent it seeks to effect

market transformation in the industrial sector) has focused “upstream” efforts on the supply side: distributors and manufacturers of goods and services.

Rebate programs largely target facility and procurement managers who generally are not decision makers in industry, but instead have to on-sell the benefits up the management chain. The results are long sales cycles and poor sales effectiveness, as well as poor market acceptance of rebates in industry and the resulting perceived need to increase incentives. When rebates are taken up, they only affect the efficiency of isolated pieces of equipment (generally at the time of replacement or change-out) and do not reduce market barriers over time. Where traditional programming has been unable to reach the energy savings potential in the core industrial processes, the Energy MBA Program will get at these potential energy savings through its focus on engaging companies to participate in a continuous improvement process in which they set their own performance metrics for staff who then find incremental and longer-term opportunities to improve core processes—and have the top management backing to make the changes.

The design of the Energy MBA program has incorporated the comments and recommendations of an evaluation of a Northwest Energy Efficiency Alliance funded pilot project using this management diagnostic approach. The study states, “The diagnostic with [action] plan development service appears to have resulted in a high level of involvement on the part of the facilities.” In addition, the results of the evaluation of the pilot test found that the program can “be effective if it is offered with sufficient support and coaching to ensure that the participating firms develop action plans to implement the recommendations of the diagnostic service.”⁹

I.B.4 Coordination with Other Program Implementers

The Energy MBA program provides services that are truly complementary to existing nonresidential programs, as well as to the utility call centers and nonresidential utility field/account representatives. Participants will incorporate in their management systems a process for identifying and acting on opportunities to improve their energy performance. These management processes will require the ongoing collection of energy information and the education of management and facility staff. We see a valuable benefit to linking the Energy MBA program activities to the available resources of information programs (such as SDREO’s Energy Resource Center, SCE’s CTAC, PG&E’s PEC, audit assistance programs, building operator certification trainings, utility staff experts). We intend to actively market these programs when appropriate to participant needs. In addition, the management processes will immediately begin to identify potential energy savings and projects. Where additional market barriers exist (e.g., high first costs, access to capital/financing), we see the opportunity for participants to utilize the resources of other programs (such as the SPC programs) to mitigate remaining barriers to pursuing energy savings and projects.

We will coordinate marketing and outreach activities with the implementers of other nonresidential programs to ensure that the target sectors and participants are fully informed of

⁹ Research in Action, 2003. *You Never Know Until You Try: An Independent Evaluation of the EnVinta One-2-Five Energy Program*. Proceedings of the ACEEE 2003 Summer Conference.

the different opportunities and resources available to them to improve their energy performance, and, by tracking and handing off participants to appropriate follow on programs, to increase the realization rates of identified potential energy savings.

Nexant staff have years of experience in a range of energy efficiency and load management programs, involving standard performance contracting, competitive bidding, demand response, direct install, retro-commissioning, and distributed generation/renewables. We are experienced in program administration and implementation, and are uniquely capable of identifying opportunities for beneficial collaboration and links to other nonresidential program.

I.C Program Objectives

The primary objective of the Energy MBA program is to “change the policies and practices of industrial manufacturers to continuously improve energy performance.” The program will seek participation among the members of the target industrial sectors and provide business and technical assistance to change management practices and processes, when compared to best practices (benchmarked against other companies within a sector) that will lead to improvements in energy performance. Section V lists specific goals and metrics associated with Program objectives.

The primary goal of the Energy MBA program will be to recruit and assist 30 participants in the SDG&E services territory in conducting a management diagnostic resulting in a detailed critical action item report. The Program will provide additional support to participants who need help in implementing the action items, including management facilitation and technical diagnostic assistance. After six months, participants are invited to conduct a repeat management diagnostic to begin the cycle of continual improvement in their management policies and practices leading to improved energy performance.

II.A Program Implementation

Over the past three years, high energy costs, price volatility, and reliability issues have adversely impacted the competitiveness and survival of California industries. In searching for remedies, however, most businesses continue to consider energy issues as primarily technical matters dealt with by engineers or facility managers, with purchasing aspects handled in the purchasing department. Such staffs generally have limited authority in the organization and so energy savings projects have to be sold to senior management who have little exposure to or technical understanding of energy projects. The frequent result is that energy savings opportunities are lost as project recommendations are indefinitely deferred by management.

In contrast, the Energy MBA Program’s comprehensive support process, starting with engaging and securing buy-in of senior management in targeted California firms, stimulates awareness and education at policy-making levels that will result in the business changes required to effect new energy management policies and practices. This process is illustrated below in Figure II-1 and described more fully in the remainder of Section II.A

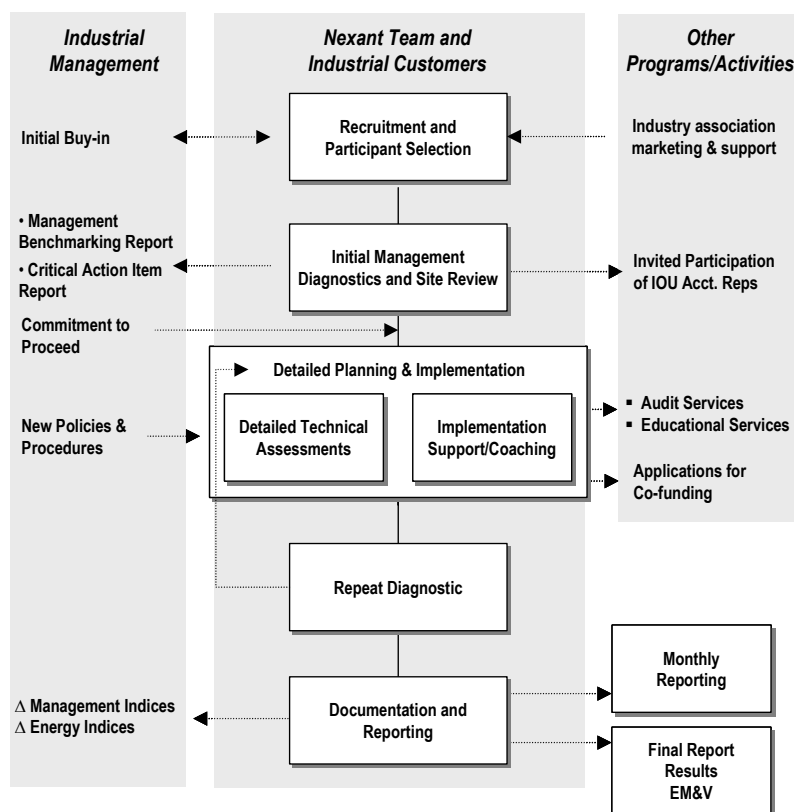


Figure II-1: Energy MBA Program Process

II.A.1 Recruitment and Participant Selection

The Nexant team will work extensively with industry associations to identify candidate companies and to market the Energy MBA Program concept to top managers. We have experience working with industry associations in the conduct of effective outreach to member companies. Working with the support from organizations such as the San Diego Regional Energy Office (SDREO), the San Diego Industrial Environmental Association (IEA), the California League of Food Processors, and the California Manufacturers and Technology Association (which represents more than 30,000 manufacturers), we expect rapid and effective marketing to candidate firms.

The Project team will concentrate initially on the pharmaceutical sector (both the food sector (SIC 20) and chemicals sector (SIC 38), which includes some of the most process energy-consuming companies in California, but is hard to reach, and then expand to include other industrial sectors, such as industrial machinery and electronics.¹⁰ Potential participants will be identified in collaboration with industry associations, whose assistance will aid in effective outreach, and in liaison with utility account representatives. Criteria for screening and selecting participant companies will include:

- Member of a target sector (e.g., pharmaceuticals, electronics)
- Willingness to ensure the involvement of senior management
- Commitment to complete the management diagnostic and detailed list of critical action items
- Expression of intent to implement action items on own or—with matching in-kind labor contributions—to proceed with additional program assistance

Our goal is to contact approximately 100 potential participants via telephone discussion representatives of a firm's senior management team. We will recruit 30 participants, who will be required to sign Acknowledgement Forms agreeing to participate in the Program. We will prepare a supplementary list of up to ten firms as back-up participants should any of the initial participants drop out of the Program for any reason.

Deliverables:

- Signed Acknowledgement Forms from 30 customers. Recruitment and enrollment timing will be staggered to ensure that we can promptly serve participants.

II.A.2 Initial Management Diagnostics and Site Review

This stage will involve facilitating a diagnostic review with each company, followed by validation of the results, a facility opportunities review and a brainstorming session with participant personnel. This allows a broad identification of opportunities for improvement and

¹⁰ The largest 10% of food industry electricity consumers comprise more than 300 firms statewide and the largest 10% of gas consumers comprises 250 firms, guaranteeing a sufficiently large and geographically diverse population in PG&E's territory.

these results will be mapped out in an initial 90-180 day action plan, fully integrating management policy benchmarking outcomes and technical recommendations.

II.A.2.1 Management Diagnostic Session

The Energy MBA Program staff will facilitate a management diagnostic session to assess ten key areas of importance for driving sustainable energy cost reductions. The key areas include:

- **Leadership** – demonstrating commitment from the senior management team;
- **Understanding** – understanding the opportunities that exist within your operation for energy savings;
- **Planning** – developing plans for improvement backed up by key performance indicators to track progress;
- **People** – making the people that utilize energy accountable for its use, as well as investing in people (training) and resource availability;
- **Financial Management** – reviewing capital and operating budgets in relation to energy management;
- **Supply Management** – assessing how energy is purchased in a competitive market, as well as reviewing mechanisms employed to ensure a high level of quality and reliability;
- **Operations and Maintenance** – ensuring energy management issues are incorporated into operating and maintenance procedures;
- **Plant and Equipment** – establishing guidelines and evaluations of new designs and innovations to enable energy efficiency to be optimized;
- **Monitoring and Reporting** – ensuring the right energy flows are metered and that usable reports are developed to track and proactively manage energy; and
- **Achievement** – assessing how the operations are performing against established targets and reviewing projects to ensure the right outcomes are achieved.

The diagnostic process typically takes up to two hours and establishes the current level of development as well as identifying actions to be incorporated into improvement processes. In particular, the diagnostic session will:

- Identify the opportunities for improvements in business management systems and processes.
- Enhance the understanding of senior managers and facility staff regarding the impact of energy on their business and how effectively they manage it.
- Gain buy-in from senior management by demonstrating the benefits of a structured approach to managing energy and stimulate the company to gain an appreciation of the gap between desired performance and current achievement.

- Define critical action items (changes in management policies and practices) and the priority order in which they should be implemented to gain the greatest impact at the lowest cost.
- Provide an indication of the level of savings available

The outputs from the session will include clear actions for improvement of business practices for energy management and benchmarks of these management practices relative to other organizations in the same SIC grouping.

II.A.2.2 Validate Results

During the diagnostic sessions, the participating team provides consensus answers to the questions to the best of their knowledge. These responses are not confirmed within the session, to maintain the pace of the process and so the management team is not tied up unduly. As a result, it is important (post-diagnostic) to validate and refine the company's understanding of their current business practices relating to energy and which ones are critical to improve.

The validation process will involve structured discussions with the management team independently, as well as discussions with other staff members using a standard template. The aim is to confirm that systems and processes are in place and that they have been fully implemented. For example, if a participant has a policy/procedure for the use of high efficiency motors, then the check will be to ensure the policy/procedure is up to date and that it is implemented in practice (e.g., by reviewing the last ten motors that were purchased).

Results are confidentially benchmarked against other peer firms with similar usage and annual expenditures. At present, EnVinta's One-2-Five[®] Energy database holds energy and management benchmark data from more than 1,000 sites. More than 160 sites are in food industries, providing robust detail to allow participating firms to make comparisons to their worldwide competitors and peers. Participating firms use these benchmark rankings not only in comparing their performance with industry peers, but also in measuring their own progress over time.

During the participant discussions to validate results, the level of acceptance of the results of the management diagnostic session will be determined and any concerns addressed. In addition, the identified priority actions will be discussed and confirmed.

The results will be incorporated in reports developed by the Nexant team, including diagnostic outcomes customized to incorporate issues raised, site findings, and benchmarking. This information will be used as a basis for the company to develop business action plans.

Deliverables:

- Diagnostic and Benchmarking Report.
- Customer meeting to provide feedback.

II.A.2.3 Energy Data Review and Identification of Opportunities

The Energy MBA staff will work with participants to conduct an initial opportunities review—working with line-level personnel as a team—to review existing energy data and historical energy management actions and inspect the site. The focus of this part of the exercise is to facilitate the participant in identifying initial technical opportunities for improvement to include in their initial action plans.

The continuous improvement process we will be applying with participants involves change implementation through a series of short-term (90-180 day) action plans that are implemented, reviewed for results, and then recreated to reflect updated priority action items.

Program staff will work with participant staff to draft an initial set of actions (see Section II.A.2.4 below) to be implemented in the first 180-day implementation period. Engaging site personnel enables the Program to use the initial action planning process—typically conducted in approximately one week’s time—to begin coaching site personnel to develop site-specific performance metrics and energy data monitoring requirements. Specific areas requiring continued coaching assistance are generally highlighted among the action plans identified during the initial diagnostic.

II.A.2.4 Detailed Critical Action Item Report

The Energy MBA staff will work with participants to draft a detailed critical action item report, including key business practice and technical savings action items, a timetable, and responsibility assignments for implementation. Throughout this process, the Program does not deliver consultant reports, but instead full ownership of the process to the company by coaching the participants, providing technical expertise, and giving external encouragement to make change. The project team will work with participant line-level staff to gain management team commitment to proceed with detailed action planning and implementation.

Typical Action Item Reports include both management- and facility-oriented recommendations, each of which is prioritized for action. Example recommendations may include:

- Arrange for an executive-level officer to sign an energy policy or directive containing specific goals and objectives for improving energy efficiency and reducing energy costs.
- Establish protocols to ensure energy efficiency guidelines are routinely applied in replacement of energy using equipment.
- Design and implement performance metrics for maintenance staff relating to speed and effectiveness of response to eliminating energy waste and responding to any efficiency deterioration of energy-intensive equipment.
- Establish protocols to ensure energy efficiency guidelines are routinely applied in replacement of energy using equipment.
- Generate monthly reports depicting overall energy use per unit of activity (e.g. kWh per ton) and examine results where they show large cost or usage variance from target.

- Facility- and process-specific technical recommendations for energy-saving operational and capital projects including actions to drive savings in core processes.

Each of the facilities committed to proceeding further will be eligible for assistance with the development of more comprehensive action plans for the priority actions, including a full map of the steps necessary to complete each action and the identification of personnel needed and timelines to completion (see II.A.3 below). The Nexant team will support the site team through this process to ensure consistency with elements of the broad action plan, thoroughly addressing both technical opportunities and identified management policy changes.

Deliverables:

- Initial Critical Action Item Report for each participant.

Activities in this Program stage coordinate with utility account representative activities, investigate past experience, if any, in other programmatic activities and link to external programs that may deliver supporting services (e.g., energy audits, rebates, technical operator training, etc). The Program team will actively market suitable DSM programs to participants to encourage them to fully utilize these programs to better define technical opportunities, implement their plans, and achieve their objectives.

II.A.3 Detailed Planning and Implementation

The Management and Benchmarking and the Critical Action Item Reports described above provide senior management and facility staff a foundation for changing management policies and practices to improve the energy performance of their companies. At this point of the Energy MBA Program process, participant companies may elect to proceed with additional Program assistance and, if so, will be asked to sign a Commitment to Proceed document. The agreement documents a company's commitment to implement all identified critical action items and to provide in-kind contribution of time and materials equal to 50 percent of the Program's ongoing assistance. Not all of the customers who complete the management diagnostic will commit to proceed further within the Program (some will integrate findings into their business process without further assistance, others may decide to defer consideration of management changes to a future date).

Nexant expects that roughly 20 of the 30 participants (60 percent) will commit to proceed further within the program. Of the 20 who commit to proceed, the following describes the Energy MBA Program services likely required:

- Approximately 10 (half of those proceeding with company assistance) will request assistance conducting detailed technical process assessments
- Approximately 10 (again half, but not necessarily the same participants) will request implementation support and coaching assistance
- All 20 commit to repeating the management diagnostic in six months' time and updating their list of critical action item plans to start the next 180-day cycle of their continual improvement process.

II.A.3.1 Detailed Technical Assessments

This stage is conducted in concert with implementation support and coaching (described immediately below in Section II.A.3.2).

As suggested above in the Program Rationale (Section I.B), the Energy MBA Program differs from traditional programs in its ability to focus on management policies and procedures leading to the identification of opportunities for longer-term process improvements, as well as short-term operational savings. The Program will establish linkages with statewide program auditing services to complement the Nexant team's expertise in industrial process systems, which, in combination with the Program's focus on continuous improvement in corporate management, ensures the ability to tap into the reservoir of industrial process energy savings potential.

Deliverables:

- Supporting project-specific industrial systems and process technology technical assistance, matched by in-kind contribution of time and materials.
- Documented changes in practices and procedures, with engineering estimates of energy savings

Activities in this Program stage coordinate with statewide program audit services for retrofit identification, statewide SPC and other rebate programs, the CEC Public Interest Energy Research program, California Power Authority loans, and educational services.

II.A.3.2 Implementation Support and Coaching

The Energy MBA staff will support participants in the implementation of the identified priority changes in management policies and practices. In particular, this task will offer to carry out the following:

- Provide guidance on management system improvements, including establishment of key performance indicators and control metrics, opportunities for improvement to management reporting and data handling, establishment of policies and procedures, etc. In addition to guidance and coaching, we will provide templates and assistance on policies such as overall savings targets, equipment procurement, personnel accountabilities, operations and maintenance procedures, etc.
- Assist with reviews of existing operations and maintenance procedures focused on energy-intensive processes and equipment, including establishing parameters for improvement, updating existing procedures, with particular emphasis on changes that improve production capacity or quality.
- Provide advice to improve participants' capability to deliver outcomes, including advice and support on all operations and capital investment issues to improve energy performance and control.

These elements of technical assistance—support and coaching—are unique to the Energy MBA Program and help leverage the technical capabilities of facility personnel to get the right outcomes.

Deliverables:

- Site-specific business practice and policy guidance; technical assistance matched by in-kind contribution of time and materials.
- Documented changes in practices and procedures, with engineering estimates of energy savings

Activities in this Program stage coordinate with statewide program audit services and educational services.

II.A.4 Repeat Diagnostic

Within six months of a participant’s initial diagnostic, the Energy MBA staff will conduct a progress review with each company still participating, and repeat the management diagnostic sessions described above in Section II.A.2.1. This step marks the beginning of the continual improvement process and documents implementation of changes in management policies and practices and of improvements in energy performance.

The repeat diagnostic also supports developing the next 180-day plan based on a new set of critical action items to further improve business practices, as some of all of the previous critical action items will have been implemented. This generates a continually updated plan of action focused on the new priorities as part of the ongoing continuous improvement process.

II.A.5 Documentation and Case Studies

The Energy MBA Program will submit monthly and quarterly reports and a final Program report. The Program will collect data necessary to satisfy EM&V requirements. This will include an analysis of industry needs from the benchmarking database to define common needs, which can also be used in the design of future DSM programs.

An important component of the Program design is to disseminate Program outcomes to participants and non-participants. The team will develop case studies that will document “lessons learned” and be distributed to industry associations for broad dissemination to members of other targeted industry sectors and to utility account representatives for use in providing services to customers.

Deliverables:

- Monthly and quarterly reports to CPUC
- Case studies for broader dissemination of Program “lessons learned”
- Collection of data to support Program EM&V requirements.

II.B Marketing Plan

A cornerstone of the Energy MBA Program's marketing plan is the supporting outreach of industry associations. Nexant has received statements of support from the San Diego Regional Energy Office (SDREO), the San Diego Industrial Environmental Association (IEA), the California League of Food Processors, and the California Manufacturers and Technology Association, among others.

Collaboration with the industry associations helps to market the Program in the following ways:

- Industry associations are in a unique position to disseminate Program information to candidate program participants. The associations supporting the Program are an important means to reaching interested member firms and enhancing Nexant team's direct outreach marketing through phone calls and scheduled presentations to management.
- The support of associations lends considerable credibility to the Program concept. The Nexant team will leverage this support in more broad-based marketing efforts conducted through the associations' own outreach channels.
- Larger associations, such as the California Manufacturers and Technology Association (CMTA), have energy committees whose active members not only comprise excellent Program participants, but also Program champions. The CMTA Energy Policy Director has reviewed the Energy MBA concept and expressed interest in working with Nexant to reach the association's membership.

The initial steps of the Energy MBA's marketing plan calls for working with the industry associations to disseminate information to their member companies. The Nexant team will identify firms within targeted industries that are most likely to benefit from the Program offerings. We are especially interested in targeting firms that have already adopted recognized management standards (e.g., ISO 9000, ISO 14000, Hazard Analysis and Critical Control Point, Responsible Care, etc.). From the perspective of program implementation, firms that have previous experience in implementing voluntary management standards are more likely to commit to applying similar discipline and techniques to energy aspects of their businesses.

The Nexant team also intends to invite the participation of utility account representatives during management diagnostic sessions and in downstream activities conducted with site personnel to keep them engaged with their customers in creating value and assisting them with other energy management programs. The Program's marketing also includes development of supplemental materials for us by the utility account representatives, who provide additional links to IOU-implemented statewide energy efficiency programs.

II.C Customer Enrollment

Enrollment in the Energy MBA Program is a two-stage process, beginning immediately prior to the initial management diagnostic session. Participants will sign an Acknowledgement Form prior to the receiving Program services, which begin with the management diagnostic session

and site review. By signing the Acknowledgement Form, participating firms agree to commit staff resources—both senior management and site personnel—to the diagnostic and review process and to participate in developing the initial Action Item Plan. The Acknowledgement Form will also contain a standard disclosure statement that the participating firm is not obligated to buy any fees of services beyond that which are funded by the Public Goods Charge program. Further, the participants will agree to the publishing of case study material, subject to screening by the company to remove confidential or sensitive material.

The second stage of enrollment occurs after a participant has received its Management Benchmarking Report and Action Item Plan. Participants that wish to receive further technical assistance in the Program will be obligated to sign a Commitment to Proceed document. The document is a voluntary agreement that the signatory firm will implement cost-effective action items *and* contribute in-kind time and materials to match the Program’s subsequent technical advisory and coaching services. Stage 2 participants will be eligible to receive technical assistance associated with the detailed planning and implementation as described above in Section II.A.3, as well as repeat diagnostic sessions described above in Section II.A.4.

II.D Materials

Not applicable.

II.E Payment of Incentives

Not applicable.

II.F Staff and Subcontractor Responsibilities

As the prime contractor, Nexant will supply the overall Program Manager, John Mapes, for the Energy MBA Program in the SDG&E service territory. Nexant will be responsible for satisfying contract deliverables and other requirements, including periodic reporting, invoicing, and maintenance of appropriate subcontracts. Because of the nature of the Program services, the Program will be staffed primarily by highly skilled and experienced staff members at senior positions. Our technology partner EnVINTA, led by Jon Jutsen, will play a powerful supporting role in delivery of program expertise to optimize Program outcomes, using its international expertise in the design and delivery of similar programs. Lead and support roles by task include the following:

- **Program Management Functions:** Nexant will staff this position with a Principal or Program Manager (Nexant titles) who will have responsibility for all program management functions, staffing assignments, coordination and negotiations with the IOU contract manager, budget management, invoicing and cost documentation, and reporting. EnVINTA’s program manager will participate in similar supporting tasks on a regular basis.
- **Recruitment and Site Selection:** Nexant has responsibility for this task activity, with support from EnVINTA. Assigned staff will be at the level of Principal or Program Manager.
- **Management Diagnostics and Site Review:** Nexant and EnVINTA will share responsibility for this task activity. Assigned staff will be at the level of Principal or Program Manager.

- Detailed Planning and Implementation Assistance: Nexant has responsibility for this task activity, with support from EnVINTA. Assigned staff will be at the level of Principal, Program Manager, or Senior Technical Specialist
- Repeat Diagnostic: Nexant and EnVINTA will share responsibility for this task activity. Assigned staff will be at the level of Principal or Program Manager.
- Documentation and Reporting: Nexant will be primarily responsible for this task. Clerical staff will prepare monthly reporting; the Energy MBA Program Manager will have responsibility for accuracy and timeliness. The Energy MBA Program Manager, with support from Senior Technical Specialists, will be responsible for preparation of the draft and revised Final Reports. A senior representative from EnVinta will participate in similar supporting tasks.

II.G Work Plan and Timeline for Program Implementation

Table II-1 presents the Energy MBA Program task schedule. To meet expected delivery timelines, Nexant will hope to get timely notification of acceptance of this proposal. The proposed timeline is indicative only and is dependent upon access to customer sites.

Table II-1: Energy MBA Implementation Task Schedule

Task/Activity	2004				2005				2006		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Program Management Functions	■	■	■	■	■	■	■	■	■	■	■
Recruitment & Site Selection	■	■	■	■	■						
Initial Mgt. Diagnostic & Site Review	■	■	■	■	■						
Detailed Planning & Implementation											
• <i>Technical assessments</i>		■	■	■	■	■	■	■			
• <i>Implementation support & coaching</i>		■	■	■	■	■	■	■			
Repeat Diagnostics			■	■	■	■	■	■			
Documentation & Reporting											
• <i>Monthly Reports & Invoices</i>	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
• <i>EM&V Draft & Final Report</i>										▲	▲
• <i>Program Draft & Final Report</i>									▲	▲	

III.A Customer Description

The Energy MBA Program targets industrial customers, primarily those in process industries, initially starting with those in the pharmaceuticals, industrial machinery, and electronics sectors. The process energy savings potential in these market segments identifies them as underserved (by traditional DSM programming) customer populations, which the Program will better serve engaging the following market actors in innovative ways:

- Senior managers of industrial firms
- Industrial facility site personnel
- Industry associations
- Industry trade allies
- IOU account representatives

The Energy MBA program will target medium and large industrial customers assumed to be more receptive to principles and practices of management standards. Large customers are defined as having loads greater than 500 kW of electric demand or 250,000 therms per year of gas. Medium customers are defined as having loads between 100 kW to 500 kW or 50,000 therms to 250,000 therms.

III.B Customer Eligibility

All IOU industrial rate account customers are eligible to participate in the Program. To enroll in the Program, eligible participants will sign Acknowledgement Forms that acknowledge standard disclosures and agree voluntarily to commit participant personnel resources to the Program process.

III.C Customer Complaint Resolution

Overall program success will hinge not only on our performance during Program implementation, but also on the quality and responsiveness of our customer service should any problems arise. We will therefore have in place customer dispute resolution capabilities with an office-based customer service team who will communicate immediately to the program manager or other appropriate personnel.

While our entire quality assurance philosophy is centered on doing the job right the first time and every time, we also acknowledge from experience that unforeseen situations can occur. Part of the success in complaint resolution is to quickly address and begin to resolve the problem promptly. Therefore any complaints received regarding the Program will be answered in no more than three days. Every endeavor to resolve any persistent complaints, after the initial contact, will be made with the intention of reaching a satisfactory outcome in no more than ten days.

The Energy MBA Program will maintain a tracking database of all customer complaints regarding the Program. The Nexant team will contact each individual submitting a complaint,

and document the complaint and the resolution method in the program database. The conversation will be followed up with a confirming letter. The database will be updated in real time allowing the Nexant team to review inputs to see if any trends are evident then proactively adjust services to better meet customer expectations.

Because the Program concept does not involve financial transactions, the team does not anticipate significant disputes nor does it expect to have to offer arbitration to settle complaints. Documentation of resolutions (or attempted resolutions) will be maintained in the Nexant database for a minimum of three years.

III.D Geographic Area

The Energy MBA Program recruits eligible customers from the entire SDG&E service territory.

IV.A Energy Savings Assumptions

Although the Energy MBA Program has no directly quantified energy savings goals, we will track and document identified energy savings opportunities and project savings (to the extent that projects are implemented within the timeframe of the project). From prior experience, we expect first-year savings to be in the range of three percent of average site usage for participating firms.

As the companies implement and sustain better business practices, continuous improvement in energy utilization will, over time, increase savings attributable to the Program intervention. These energy savings results should be considered as evidence that the changes in management policies and practices (the objective of the program) are having the right effect, and should not be thought of as primary indicators for quantifying Program performance. (See also the discussion of goals and metrics in Section V.)

IV.B Deviations in Standard Cost-effectiveness Values

Not applicable.

IV.C Rebate Amounts

Not applicable.

IV.D Activities Descriptions

Initial Management Diagnostic and Site Review (see detailed description in Section II.A.2). Cost per activity is \$8,589 on average, including fully burdened labor costs, travel, and other direct costs.

Detailed Planning and Implementation: Technical Assessment (see detailed description in Section II.A.3.1). Cost per activity is \$9,652 on average, including fully burdened labor costs, travel, and other direct costs.

Detailed Planning and Implementation: Implementation Support and Coaching (see detailed description in Section II.A.3.2). Cost per activity is \$12,480 on average, including fully burdened labor costs, travel, and other direct costs.

Repeat Management Diagnostic Session (see detailed description in Section II.A.4). Cost per activity is \$2,796 on average, including fully burdened labor costs, travel, and other direct costs.

In the SDG&E service territory, the goals of the Energy MBA program will include the following levels of participation, inputs, and outcomes:

- Primary Goal: 30 management diagnostic sessions, resulting in:
 - Benchmarking against other companies within sectors
 - Management score against “best practices”
 - Detailed critical action item report
- Supporting Goals:
 - 10 companies provided management facilitation assistance
 - 10 companies provided technical process assistance
 - 20 companies provided repeat management diagnostics

During the program, participants are expected to identify and change management policies and practices. The opportunities for change are captured in the detailed critical action item reports. After six months of participation in the Energy MBA program, the repeat management diagnostic sessions will assess progress in implementing the identified changes, and identify new opportunities as part of the process of continual improvement.

Changes in management policies and practices could include:

- Management commitment to improving energy performance as evidenced by
 - Including references to energy performance in corporate policies
 - Setting energy goals for the company, by business lines, and within functional areas
 - Assigning responsibility and authority for energy performance to specific staff
 - Including specific energy criteria in business decision-making processes
- Management actions to effect energy performance as evidenced by:
 - Providing energy training to staff
 - Implementing energy measurement, collection, and reporting procedures and systems
 - Continuously identifying and documenting energy savings opportunities and projects
 - Approving budgets and committing resources to energy opportunities and projects
 - Pursuing energy opportunities and implementing energy projects
 - Continuously reviewing changes in management policies/practices and energy performance

If the CPUC awards funding of the Energy MBA program in all three IOU service territories, the economies of scale in program management will be used to conduct additional information

outreach to industrial manufacturers. The Energy MBA program will apply such freed-up program management funding towards the development of management case studies that capture the experience and benefits of representative participants in each of the target industrial sectors: food processing, electronics, and chemicals/pharmaceuticals. As part of an additional information outreach effort to extend the impact of the program, the case studies will be distributed to industry associations, particularly those serving the target industrial sectors, for broader dissemination among industrial manufacturers.

Table V-1 presents a simplified logic chart that places the goals in the context of summary targeted market barriers, market actors, Program activities, market effects, and market effects metrics.

Table V-1: Manufacturers’ Business Assessment for Energy (Energy MBA) Simplified Program Logic Chart

Objective	Market Barriers Addressed	Strategy and Market Actors	Program Activities/ Outputs	Market Effects		Market Effects Metrics		Savings Metrics
				SHORT TERM Behavior Change Effects (1 year)	LONGER TERM Market Effects (2- 5 years)	SHORT TERM Behavioral Change Effects (1 year)	LONGER TERM Market Effects (2- 5 years)	Identified Annual Energy-Savings
Increases in energy performance through changes in management policies and practices of industrial manufacturing sectors	Lack of management commitment Lack of awareness of best management practices Performance uncertainty High information costs Split incentives	Target “hard-to-reach” process energy intensive industrial manufacturer (e.g., food, electronics, chemicals/pharmaceuticals) Work “upstream” with senior management on changes to management policies and practices Promote program and distribute “lessons learned” through industry associations Provide management facilitation and technical assistance services, with follow-up support and continual improvement assessment at 6 months Use proven EnVinta One-2-Five Energy management diagnostic tool and benchmarking database	Outreach (e.g., presentations, distribution of program materials) to industry associations 100 business contacted 30 management diagnostic sessions w/ detailed critical action item reports 20 participants proceeding within program: - 10 detailed technical assessments - 10 implementation and coaching support sessions - 20 repeat management diagnostic sessions at 6 months Case studies in target sectors (if program funded in all three IOU service territories)	DIRECT	DIRECT	DIRECT	DIRECT	FY-04-05: Short term O&M energy savings projects Process energy savings projects
				INDIRECT	INDIRECT	INDIRECT	INDIRECT	

Section VI Program Evaluation, Measurement and Verification (EM&V)

Program evaluation is critical to both successful program implementation and rational program evolution. Objectives of the program evaluation process are therefore not only to measure achievements in meeting the primary goal of the Energy MBA Program (i.e., to change the corporate management policies and practices of industrial manufacturers to continuously improve energy performance), but also to help ensure Program success. This section presents our general approach to evaluating the Program. An independent EM&V subcontractor will develop the final evaluation plan and provide detailed information as indicated below.

VI.A Outline of the EM&V Plan

Within 30 days of entering into contract to implement the Energy MBA Program, Nexant will solicit and engage the services of an independent EM&V contractor, whose first task will be to prepare a draft EM&V plan for submission to the CPUC Agreement Representative. The EM&V plan will, at a minimum, contain detailed task descriptions for providing the following items:

- Up-front market assessments and baseline analysis of participant management practices. Nexant will gather and document much of the requisite data during initial management diagnostic tasks; the evaluation plan will describe the EM&V contractor analyses.
- Ongoing feedback and guidance from the EM&V contractor to Nexant during the course of Program implementation. The EM&V plan will describe the frequency of constructive feedback and how the effects of such feedback will be assessed.
- Measurement of program performance parameters. Again, Nexant will gather much of the requisite data (in this case, during the repeat diagnostic tasks); the evaluation plan will describe the EM&V contractor analyses.
- Assessing overall program performance. The EM&V plan will describe primary Program performance metrics, consistent with the objectives described in Section V, and in the specific contexts of the Program's ability to overcome targeted market barriers and viability of the Program design.
- Informing decisions regarding compensation and final payment. As the EM&V contractor is expected to make compensation recommendations, the plan will describe the basis upon which the recommendations shall be made.
- Assessing whether continuing need for program exists. Similarly, the plan will describe the basis upon which the recommendations shall be made.

VI.B Candidate EM&V Contractors

Nexant nominates Quantec, LLC and Research into Action, Inc., both well known and respected in the field of DSM evaluation, as candidate firms to provide EM&V services.

VII.A Primary Implementer

Nexant, Inc. is a Delaware corporation formed in 2000 to provide technical and management consulting services and technology solutions to the global energy industry. Nexant's focus is U.S. and international electric and gas utilities, energy producers, petroleum and chemical companies, international development organizations, national and regional government agencies, and energy end-users. The company established eight offices and developed a portfolio of over 1000 projects in nearly 30 countries. Nexant's headquarters is in San Francisco with other offices in Los Angeles, San Diego, Boulder, CO; Phoenix, AZ; Houston, TX; Madison, WI; White Plains, NY; Washington, D.C.; London, U.K.; and Bangkok, Thailand.

Nexant's Energy Delivery and Management Division is well-suited to provide this program based upon not only our technical depth and expertise in the energy arena, but also because we have the management level resources that can bring the message to the participant's boardrooms. The effectiveness of this program's implementation will be directly linked to our ability to engage and influence the participant decision-makers who occupy the senior management suites of California's industrial customers. Within our Energy Delivery and Management Division, we have a number of management team members who can command respect in such an environment, not only from the technical and facilitation aspects of the work, but also based on long-term experience in the energy industry.

Nexant's team to staff this project will include individuals whose experience ranges from over 10 years in a California utility's boardroom (culminating as a Senior Vice President of Distribution Services), to other senior staff, each having more than 15 years experience dealing with commercial and industrial customers and their management teams. When compiled as a experiential base, the Nexant team available and appropriate to support this program's interface with industrial customers totals approximately 150 person-years of experience operating with the electric energy industry.

The Nexant team's expert and experienced front line resources selected to staff this project include the following individuals, whose resumes are provided in Section VII.C;

- Terry Fry Principal
- John Mapes Principal
- Michael Marr Principal
- Loralyn Perry Senior Program Manager
- Phillip Hasley, Ph.D. Senior Technical Specialist

All of these individuals have been involved Nexant's delivery of high quality corporate level and program implementation support during their tenures with the company. Select examples of the representative population of work we have provided to utility and corporate clients are noted below.

Energy Cost and Reliability Studies for E&J Gallo Winery

Nexant assisted this large northern California agribusiness client who is concerned about the risks associated with the uncertainty of California's current electric market—that is, increased energy costs and reduced reliability of supply. To address these concerns, we worked with the client to accomplish three objectives: (1) quantify the risk of power outages this year, (2) identify short-term options for mitigating the risk of outages that could disrupt operations, and (3) identify short- and mid-term options for energy cost reduction and energy generation that can be implemented at the client's various sites throughout the state.

The first phase of this work involved a two-part study, in which we first analyzed outage risks and then recommended energy conservation and generation options. The specific tasks included (1) reviewing client energy data, contracts, rates, and curtailment blocks; (2) performing facility audits and site staff interviews; (3) researching options for increasing on-site power reliability for client operations; (4) meeting with representatives of the client's utilities to discuss power and gas reliability issues; (5) listing and ranking efficiency and supply options in terms of savings, costs, and paybacks as well as implementation schedules; and (6) preparing a report and presentation for the client with conclusions and recommendations. This two-part study was followed by a more detailed analysis of the risks and recommendations with the objective of preparing detailed work plans for implementation strategies. We then performed a study that consisted of a long-term energy reliability and cost optimization plan.

Evaluation of COPE Fuel Pumping Efficiency Program

Nexant evaluated the California Oil Producers Electrical Cooperative's (COPE) Oil Producers Fuel Pumping Efficiency Program (OPFPEP), funded by the California Public Utility Commission's (CPUC) 2001 Summer Initiative funds. The CPUC allocated program funding "to provide maximum impact of demand and energy usage reduction" in response to the existing and forecasted energy capacity shortages. Nexant's evaluation of the OPFPEP investigates savings calculations, measurement and verification activities, data analysis and economic tests of program effectiveness. The evaluation also includes a casual audit of participant performance and free-ridership.

Metromedia Fiber Network Power Study

Nexant conducted a power monitoring study for Metromedia Fiber Network (MFN). MFN operates several so-called telecomm hotels, which house file servers, computers, and telecommunications equipment for clients needing highly secure and reliable network connectivity. These telecomm hotels have very high power densities (50-150+ watts/square foot), computer room-quality HVAC, and high levels of electric and HVAC systems reliability and redundancy.

Nexant considered energy use characteristics and opportunities for procurement of energy at low rates, energy conservation, and load shifting at three sites (in Virginia, New York, and

California); the study involved the installation of power metering equipment at each site and data collection and analysis—activities carried out by Nexant.

The study identified several areas in which significant energy and cost savings could be achieved at the three monitored facilities, as well as recommendations for the design of new facilities. The HVAC systems were found to be operating extremely inefficiently, and power system design constraints at the facilities were found to reduce the potential for supplying power to customers' loads. In addition, badly timed equipment tests were shown to have large potential cost ramifications as a result of utility rate schedules.

Verification of Conservation Voltage Reduction at Napa Valley Winery

In 2002, Nexant provided evaluation and M&V services related to a conservation voltage reduction (CRV) project for the Center for Irrigation Technology (CIT), an independent administrator for the California Energy Commission's Agricultural Peak Load Reduction Program. The project, as submitted to CIT, included two electrical measures for energy savings, voltage controls for magnetically ballasted lighting fixtures, and capacitive power factor correction for motors for Trinchero Family Estates, a major northern California winery. Autotransformer voltage controls were installed on HID lighting circuits at two facilities for Sutter Home Winery in Napa and St. Helena, California. Nexant evaluated the savings claims, and measured the reductions in circuit voltage and circuit demand with a True RMS three-phase power meter for a small sample of the circuits during a site visit to the facilities. Our work verified the contractor's claim of 20% voltage reduction, as well as the apparent reduction in demand for the HID lighting circuits.

Energy Audits for PacifiCorp FinAnswer Program

In 2001, Nexant assisted PacifiCorp with this on-going program by performing energy audits in several of their customers' facilities, including 13 school buildings in 4 school districts, a county fairground, and an electronics manufacturing facility. The work was performed in two parts. We first identify potential improvements after performing a preliminary facility analysis using utility billing data and information that we had gathered during a brief site inspection. If the analysis suggested that significant savings were possible, we then followed up with an in-depth inspection of the facility and performed technical and economic analyses of the identified improvements. We then recommended for implementation those measures that met the economic requirements of the facility in question, and all relevant data was reported to the facility and to PacifiCorp. Some of the recommended measures included high efficiency lighting for the schools and manufacturing facility, direct digital control of the HVAC systems in one school district, and compressed air system retrofits at the manufacturing facility.

Preliminary Energy Audit for Deluxe Laboratories

Nexant is performing a preliminary energy audit of Deluxe Laboratories, a film production company in Hollywood, CA. The goals of the audits are to identify opportunities for energy savings and to recommend low-cost and no-cost measures. The work involves performing a site

inspection to catalog the existing electric and gas end-use equipment; taking spot or short-term measurements of consumption; analyzing collected data to identify opportunities and to rank measures based on potential savings; prepare a final report that presents the ranked measures and associated savings as well as a plan for moving ahead with the implementation of such measures.

Monterey Bay Aquarium

The audit of this complex facility involved studying all HVAC, lighting, and energy monitoring systems to evaluate the benefits of energy-saving retrofits. We also studied the feasibility of a cogeneration project that incorporated the existing facility and a new wing. Local weather data that had been collected in recent years was converted for use in a DOE-2 simulation. This conversion allowed for a precise calibration of the DOE-2 simulation to a year for which actual weather and utility data were available (DOE-2 simulations were within 2% of historical utility data). Our recommendations included lighting, HVAC, chiller, and process equipment retrofits. The facility eventually installed a new gas-engine chiller and variable speed drives.

Domain Chandon Winery

Nexant audited the cooling plant at this winery. The existing system was assessed for potential energy and maintenance savings. Cooling required for the fermentation process and for a small upscale restaurant at the site was provided by four 100-ton reciprocating R22 chillers. The plant suffered from excessive maintenance costs due to the precipitation of silica in the chiller tube bundles and condenser heat exchangers. All the major components of the plant were replaced. The chillers were replaced with four 125-ton screw chillers, and the air coil cooling tower was replaced with fluid coolers. In addition, a water treatment system was installed. The new system was estimated to save 27% of its original electric consumption and reduce its demand by 33%, resulting in a total annual cost savings of approximately \$90,000.

Napa Cellars

Napa Cellars had 22 wine storage tanks and one glycol circulation tank in an exposed location behind its winery. A 20-ton glycol chiller provided cooling for the wine storage tanks. Nexant assessed the energy savings that would result from the addition of three inches of polyurethane foam to the tanks, one inch around the glycol circulation pipes, and the installation of a process control system. The estimated savings from the insulation were 96% of the baseline use for cooling the tanks, or about \$5,800 per year.

Precision Circuit Masters Energy Audit

We performed an energy audit of this printed circuit board manufacturing facility. The site inspection involved measuring motor power usage and studying equipment. We evaluated possible energy-saving retrofits based on their economic viability, and we recommended those with the highest potential for economic payback. These recommendations included installing lighting controls; replacing the facility's antiquated HVAC and air compression systems with higher efficiency systems; and installing timers.

Nurserymen's Exchange

Nexant performed a site visit and follow-up analysis to assess the gas and electric savings potential in a large commercial grower's greenhouse. The grower replaced nine gas unit heaters with a high efficiency boiler and distribution system for a 70,000 square foot greenhouse. In addition, the grower planned to install thermal curtains and a natural ventilation system. A building load analysis was performed and results were used to determine the annual energy savings and economic benefit. Electric and gas savings were estimated at 43,500 kWh and 96,000 therms annually.

Schuller International

We audited this 580,000 square-foot manufacturing plant in Willows, California, to identify possible energy-saving measures. After evaluating the potential savings and economic payment of several measures, we recommended changes in the following areas: melter efficiency, compressor controls, reduced compressor air usage, variable speed drives, motor efficiency, and the lighting and HVAC systems. We then prepared documentation needed to verify the client's eligibility for incentive rebates.

Operation and Maintenance Improvement Processes (O&M)

Nexant has experience not only reviewing O&M manuals, but also analyzing how O&M improvements can produce savings. A recent publication of ours, "Measuring & Verifying Savings for Improvements in Operations & Maintenance of Energy Consuming Systems in Commercial and Institutional Buildings," was written under contract to and on behalf of the Lawrence Berkeley National Laboratories and the Department of Energy's 1998 Rebuild America Program. This publication is being incorporated into the revision of the FEMP M&V guideline.

Design of California's Non-Residential SPC Programs (1998—2003)

Since 1998, Nexant has served as the design consultant for California's ratepayer-funded non-residential standard performance contract programs (SPCs). For the initial, 1998 program year, Nexant (as Schiller Associates) designed all aspects the SPC program for each of the three state-appointed administrators in California: Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison. Our work involved establishing rules relating to eligible measures, incentive rates, timelines, baselines, and payment calculations. We coordinated public input, prepared procedures manuals and applications for each of the three programs, and authored a cross-program measurement and verification guide. We also developed the program-tracking database that is used to report program results to state regulators.

For 1999, we assisted the utilities in revising the program so that each utility could offer a program that had rules and procedures that were identical to the others. For each additional program year since, Nexant has helped revise and improve the design of the program as well as the accompanying documentation, databases, and measurement and verification guidelines.

VII.B Subcontractor

ENVINTA is a global group providing world-class energy and greenhouse management consulting and solutions to industry, commerce, government and utilities. Operating from a network of offices throughout the US, Australia and SE Asia, their success is due continuous innovation in energy and greenhouse management to drive the most cost effective outcomes for customer and meet evolving client needs.

For 20 years ENVINTA has provided consulting services addressing the full range of client needs including Procurement, Operational and Process Improvement, Greenhouse Management and Business Strategies and Programs. They draw directly on over 70 senior energy management specialists in the Australian consulting arm, Energetics Pty Ltd and its Asian Affiliate EEC Energetics, and its North American consulting alliance with Hatch Associates providing access to a vast pool of additional global resources. ENVINTA has implemented over 20 major multi-year DSM Programs for government and utility clients.

Supporting the Services group, ENVINTA has created a dedicated technology solutions group, developing leading-edge software and web-based products and tools. *One-2-Five[®]Energy* was the first such product released and it was quickly adopted by customers such as the EPA Energy Star program, Australian Federal Government, major utilities in the USA, UK and Australia and major corporations such as BP. Other products include *Energy Achiever* and *Energy Challenger[™]*, management tools similar in concept to *One-2-Five[®]Energy* and targeted to smaller enterprises.

The Services group has been awarded many Australian National Energy Management Awards and energy innovation awards and National Engineering Awards have been to the company as well as the group's CEO, Jon Jutsen, for the development of the *One-2-Five[®]Energy* software.

The ENVINTA group has worked directly with over 750 manufacturing organizations and has generated over \$0.5 Billion of annual savings for its customers. In addition, 1000 customers have utilized *One-2-Five*.

The ENVINTA group has worked directly with a wide range of clients in the manufacturing, commercial, food & beverage, mining/minerals, government and energy utility sectors. In addition, a large and rapidly growing pool of customers is utilizing ENVINTA products.

VII.C Key Personnel Resumes

Terry M. Fry

Principal



Terry Fry has more than 20 years of experience developing and managing policy, regulatory, and utility initiatives to stimulate energy efficiency. He currently directs Nexant's project management services, which focus on the implementation, due diligence, administration, and reporting for publicly funded energy efficiency programs in California, Colorado, Texas, and the Pacific Northwest. Both an engineer and an economist, Terry directs technical, economic, and market analyses to support program strategy development and implementation for end-use customers, utilities, regulators, international development organizations, and foreign governments.

Areas of Expertise

Program and project management: Directing the implementation of programs and projects including staff and contractor management, regulatory compliance, communications, and reporting.

Program design and development: Developing program concepts and documents for energy efficiency, renewable energy, and load management programs implemented by public agencies, utilities, and private companies; directing multi-party policy and strategy development efforts for utility and national energy efficiency programs.

Economic and policy analysis: Developing energy efficiency policies and projects; evaluating technical, economic, and regulatory strategies for implementing cost-effective energy efficiency projects; developing incentive pricing levels and structures; facilitating cooperative public-private participation in policy formulation and program implementation.

Representative Project Experience

Commercial and Industrial Market Assessment of Reliant Energy Service Territory. Terry managed the analysis and fieldwork of Nexant's characterization of commercial and industrial facilities and market potential for energy efficiency in Reliant's territory. The study included more than 60 building survey audits, as well as vendor and end user surveys.

Environmentally Preferable Electricity Procurement, Confidential Clients . Terry directed Nexant's support to wholesale power suppliers who were benchmarking bids for environmentally preferable electricity to a large multi-facility power purchaser. Nexant contributed to system lifecycle impact analyses (S-LCIA) conducted in accordance with U.S. EPA Final Guidance Document on Environmentally Preferable Purchasing (Aug. 1999) and the international ISO-14042 standard for determining environmental preferability. Analyses examined system effects of deploying various clean technology options and considered the full range of resource depletion, emissions loadings, ecosystem disruption, and residual hazardous waste indicators.

Energy-Efficiency Policy Study Philippines Electric Utility Industry. Developed a national policy and regulatory framework for energy-efficiency services in the electric utility industry-

restructuring plan. Training elements included six workshops for public and private parties to a framework negotiation body. The regulatory framework was enacted by the Philippine Energy Regulatory Board 1996.

DSM Training Program. Directed a USAID-sponsored eight-week program for training electric utility professionals from seven developing countries in DSM and IRP planning, marginal cost analysis, tariff design, market research program design, and program evaluation techniques. Managed staff of more than 20 instructors and technical specialists.

Work History

Nexant, Inc.: San Francisco, CA

Principal 2001–present)
Project Manager (2000-2001)

Bechtel Consulting: San Francisco, CA

Project Manager (1997-2000)

Barakat & Chamberlin: Oakland, CA

Project Director (1988 to 1997)

Sunspool Corporation: Palo Alto, CA

Vice President (1981 to 1984)

Education

Terry holds an M.Phil in Economics and Politics of Development from Cambridge University. Terry also holds a B.S. in Mechanical Engineering from Stanford University.

Affiliations

Association of Energy Engineers, Senior Member
Association of Energy Service Professionals

John J. Mapes

Principal



John Mapes has over 20 years of experience in domestic and international consulting on energy, environment, and business strategy issues to government, industry, and public service utilities (e.g., energy, healthcare, water and wastewater treatment, solid and hazardous waste management). John designs, directs, and conducts projects in: market research, strategic planning, program design and project implementation involving market assessments, technology commercialization, operations planning and start up, economic development, energy efficiency and environmental management. His areas of expertise include:

- *Market Assessment:* Characterization of demand; commercialization of energy and environmental technologies; market impact of domestic and international voluntary and regulatory energy and environmental standards.
- *Program Design and Implementation:* Market transformation, load management, and resource acquisition planning and programming involving public-private partnerships, performance contracting and other market-based mechanisms;
- *Corporate Policy and Management:* Corporate best management policies and practices; corporate environmental management systems; energy and environmental performance metrics and measurement; supply chain management.
- *Infrastructure Development:* Energy, water, wastewater, solid and hazardous waste infrastructure planning; economic, financial, regulatory, and operations analyses; project and systems development and reorganizations.

Representative Project Experience

Evaluation, Monitoring, and Verification (EM&V) of the SDREO Business Energy Services Team (BEST) Program. John directs the EM&V of this public benefit funded program targeting small commercial customers and promoting retrofit energy efficiency projects. The program provides incentive funding to offset standardized contractor project costs involving a range of eligible measures and small commercial customers in the SDG&E service territory. EM&V activities include the review and analysis of program activity data, interviews with program implementers and contractors, survey of program participants, and on site metering and data collection of a sample of participants.

Southern California Edison (SCE) Standard Performance Contracting Program. John is the principal-in-charge of this public benefit funded program targeting nonresidential customers and promoting retrofit energy efficiency projects. Nexant's SCE SPC team performs engineering due-diligence reviews of energy efficiency project applications, supporting data, and engineering estimates, conducts pre- and post-installation site inspections including spot metering and TOU/run time data logging, as needed, advises on measurement and verification (M&V) planning and conduct, and drafts summary recommendations and project reports supporting the payment of incentive funds to project sponsors.

Wisconsin Focus on Energy Programs. John directed large multi-year programs involving commercial, industrial, and agriculture markets of the Wisconsin Focus on Energy and the Energy Efficiency Performance (EEP) programs. Tasks included designing and managing financial mechanisms (“incentive programs”), conducting measurement and verification (M&V) of program performance and energy savings, and providing technical assistance (development of performance contracts, conduct of market assessments, development of financial investment feasibility software, draft of case studies).

Clean Technology Initiative, USAID India. John was the Chief of Party and Managing Director of the \$20 million, five-year initiative to promote private sector industrial environmental performance. He directed technical consultants, developed scopes of work and program budgets, consulted to industry, and supervised all contracting and reporting functions. Activities included: implementation of ISO 14001 EMS in nine industrial facilities; benchmarking of industrial environmental performance; promotion of supply chain management; transfer of cleaner process technology in dyes and textiles, pulp and paper, automobiles and components, food processing, and pharmaceuticals sectors.

United States-Asia Environmental Partnership (US-AEP), Asia Bureau, USAID Wash DC. John was Director of Business Partnering, of this USAID environmental initiative involving the promotion of public and private capacity building, technology transfer, environmental management, and networked partnerships in 10 Asian countries. John researched and developed private sector environmental initiatives, promoted sustainable industrial development strategies to improve environmental management practices in the US and Asia, and engaged U.S. multi-national companies (MNCs), Asian companies, and industry associations in USAEP programs.

Project Director, Barakat and Chamberlin, Inc. John directed projects involving private sector provision of public utility services, including private power projects, integrated waste management services, water and environmental infrastructure. Projects included developing contracts and franchise agreements involving performance standards, allocation of risk and return, and specifying compensation; calculating revenue requirements, designing rate structures, and conducting financial analyses; economic analysis of solid waste and recycling collection systems, material recovery facilities, composting programs, household hazardous waste programs, transfer stations, and solid and hazardous waste landfills; drafting business plans to commercialize waste reduction, recycling, and pollution control, and hazardous waste remediation technologies.

Education

M.B.A., Finance, Columbia University Graduate School of Business

B.S., Applied Mathematics and Engineering Sciences (AMES), University of California, San Diego (UCSD).

Completion of the Environmental Management System (EMS-ISO 14001) Advanced Lead Auditor Course, accredited by the US Registrar Accreditation Board (RAB), recognized by EARA.

Michael J. Marr, P.E.

Principal



Michael Marr is a principal for Nexant, Inc. in the Madison Wisconsin office. Prior to joining Nexant, Marr worked for Dominion Evantage, a unit of Dominion Resources, Inc., where he led a team of engineers tasked with identifying and developing cost-effective energy efficiency measures for large industrial customers in the chemical, paper, food processing, steel, and manufacturing industries. Marr is knowledgeable in the areas of centrifugal fans, pumps and pumping systems; industrial refrigeration; heat recovery systems; industrial boilers and steam systems; compressed air systems; and the design and application of small cogeneration systems.

Areas of Expertise

Marr has devoted much of his career to the study of energy efficiency opportunities in industry, and it is in this area that he is most highly skilled. Marr has studied, proposed, or implemented projects such as:

- Energy Efficiency Program Design and Management
- Energy and Process Engineering Analysis
- Energy Efficiency Project Development
- Combined Heat and Power plant design and application

Representative Project Experience

Michael is in charge of Nexant's Wisconsin office, and the project manager of the Statewide Major Markets segment of Wisconsin Focus on Energy. Tasks include designing and managing all financial mechanisms ("incentive programs"), conducting M&V of program performance and energy savings, and providing technical assistance to promote project development.

Michael worked in various capacities for both Wisconsin Electric Power Co. (WE) and Wisconsin Natural Gas (WNG). Assignments included Manager, Cogeneration Services at WE, with overall responsibility for WE's cogeneration programs, including negotiations with independent power producers, development of company-owned cogeneration plants, and interfacing with regulatory bodies. At WNG, Michael was Manager, Commercial and Industrial Marketing with responsibility for developing and implementing marketing strategies and programs designed to address the needs of commercial and industrial customers. Prior to that, Michael was Supervisor, Commercial/Industrial Energy Management at WE, responsible for the development and administration of the Commercial/Industrial/Farm "Smart Money" program, managing a capital budget of \$56 million and an O&M budget of \$3 million. Other positions included sales executive, energy management engineer and project engineer in RD&D.

Michael also has extensive experience in industry and has worked in various plant engineering functions in the paperboard, beverage can, textile and alternative energy industries.

Prior to joining Nexant, Michael worked for Dominion Eantage, the performance contracting unit of Dominion Resources, Inc. and lead a team of engineers tasked with identifying and developing cost-effective energy efficiency measures for large industrial customers in the chemical, paper, food, iron and steel and manufacturing industries. He developed a specialized expertise in pumping systems, thermal energy systems, heat recovery and cogeneration systems

Marr has specialized in providing energy efficiency services to industrial customers. His work required a thorough knowledge of industrial energy use issues, including typical electric and gas industrial rate structures, avoided costs, thermal energy purchasing strategies, and benefit/cost models used by public utility commissions for evaluation of energy efficiency programs.

Work History

Nexant, Inc., Principal (2002-present), Program Manager (2001-2002)

Dominion Resources Inc., Senior Project Engineer (1996-2001)

Proven Alternatives. Engineer Manager (1993-1996)

Wisconsin Electric Power Co. Manager, Cogeneration Services
Supervisor, Commercial/Industrial Energy Management (1983-1993)

Wisconsin Natural Gas. Manager, Commercial and Industrial Marketing (1983-1993)

Education

MS, Engineering Management, Milwaukee School of Engineering
BS in Mechanical Engineering, Brunel University, Uxbridge, England

Affiliations

Registered Professional Engineer, Wisconsin.
Chartered Engineer and Member of the Institution of Mechanical Engineers, London, England.
Member, ASHRAE
Member, TAPPI
Member, AESP

Publications/Presentations

Editor: "Windworks 8 KW Wind System Prototype Development Report," DOE Contract # DE-ACO4-76DP03533

Technical Editor: "101 Energy-Saving Ideas - A Guide for Facilities Professionals in Commercial and Institutional Buildings", Trade Press Publishing Corporation, Milwaukee, WI, 1994

Loralyn R. Perry

Program Manager



Loralyn Perry, Program Manager, has twelve years of experience in the utility industry, focusing on energy efficiency. Her skills and qualifications include creative problem solving, business development, program development, start-up, management, and implementation, as well as program administration and employee management.

Areas of Expertise

Program Management: Ensuring compliance with energy program rules; approving applications and program goal reports; working with all of the California publicly owned utilities; working with the California Public Utility Commission to assure adhesion of requirements and filings.

Program Design and Implementation: Designing residential programs including all needed components such as applications, marketing pieces, guidelines for project installation verification, policies and procedural documentation.

Program Participant Training: Developing and implementing training for program participants, including overview of program procedures and techniques for successful completion.

Representative Project Experience

Baseline Study and Impact Evaluation of Oncor's AC Installer Program (2002-2003). Loralyn was Nexant's project manager for an assessment of air-conditioner installation practices in the commercial and residential sectors of Oncor Electric Delivery Company's service territory (formerly, TXU). The purpose of the investigation was to identify practices that, if modified, would improve the overall efficiency of HVAC systems throughout the service territory, resulting in lower peak demand. Loralyn worked with the client to define the scope of work, developed investigative tools such as phone and field survey forms, and conducted interviews with several local trade organizations and HVAC service providers. She is overseeing the analysis of data collected by a local consultant who performed site inspections of recently installed AC systems, and is responsible for the final recommendations made to the client.

Program Manager CEC Peak Load Reduction Programs (2001-2003). Loralyn is Nexant's program manager for the measurement, verification, and evaluation (MV&E) of the AB 970- and SB 5X/29X-funded peak load reduction programs. In this role, Loralyn leads a team of Nexant consultants who are responsible for managing the individual program elements (eight in total). She is coordinating all work performed under Nexant's two-year contract with the CEC. Some specific tasks include verifying contract submittals, reviewing and editing plans for verifying project performance, managing budgets and work scopes, and interacting with the CEC contract manager and individual program element managers.

Program Manager for the Design of CenterPoint Energy's AC Distributor Market Transformation Program (2001-2002). As Nexant's program manager for CenterPoint Energy's Air Conditioner Distributor and ENERGY STAR® Homes Market Transformation Programs, Lorilyn led a team of program design consultants and coordinated with the utility client to develop and launch these programs, which were newly revised for the year 2002. The design team's tasks included authoring requests for proposals from potential participants, evaluating bid responses, designing proprietary program-tracking databases, developing policy and procedures manuals for participants, developing resource manuals for use by utility administrators, and updating program-specific web sites.

Work History

Nexant, Inc.: San Francisco, CA

Program Manager (April 2001–present)

Electric Gas Industries Association (EGIA): San Leandro, CA

Senior Program Manager (February 2000–March 2001)

Pacific Gas and Electric Company: San Francisco, CA

Project Manager, The Residential Contractor Program, (October 1998-December 1999)

Supervisor, New Construction Program Engineers (April 1995–October 1998)

Account Representative, San Francisco Division, (September 1990–March 1995)

Education

Lorilyn earned a Certificate in Project Management, from the University of California, Berkeley Extension which was Awarded with Distinctions

She holds a 5-year professional degree BLA, from the University of Washington, Seattle

Affiliations

AESP Energy Services and Technology Committee co-chair, 2002-2003

PAC member of the Combined Refrigerator Electric Water Heater (CREWH) project in association with Davis Energy Group, 2002-2003

Member of Women in Energy, San Francisco, California

Publications/Presentations

“California's 1999 Residential Contractor Program: A Collaborative Approach to Program Design and Administration,” AESP Annual Workshop, With Frederick D. Sebold, Keith Fuller, Lance DeLaura, Fran Curl and Neil Sybert, Tucson, Arizona, December 1999

Phillip Hasley

Senior Technical Specialist



Phillip Hasley, Senior Technical Specialist in Nexant's Energy Management Services Unit, has seven years of experience providing auditing, energy analysis, and measurement and verification (M&V) services for utility and customer clients. He currently provides technical assistance for performance contracting programs of Southern California Edison, Pacific Gas and Electric Company, and TXU Electric. He has written chapters of M&V procedure manuals and has conducted M&V training workshops for ASHRAE, and several utilities as well as course training for the Building Operator Certification program of the Northwest Energy Efficiency Alliance. Phillip also assisted the three investor-owned California utilities with the design of their standard performance contract programs.

Areas of Expertise

Energy Analysis: Conducting energy audits, due-diligence reviews for energy/demand savings; analyzing measure-specific energy savings; building simulation modeling using VisualDOE; conducting billing analysis; evaluating potential measures for cost-effectiveness.

Engineering: Developing and reviewing M&V plans, auditing buildings, studying technical feasibility, evaluating project cost; HVAC design for medium and large commercial buildings.

Project Management: Approving applications and savings reports; working directly with energy services companies on projects; mediating M&V disputes between parties; advising contractors on savings estimates; managing a team of engineers and inspectors

Representative Project Experience

Analysis and Risk Assessment for Large California Agribusiness Client. Phillip identified critical loads and processes that would be adversely affected by energy outages, quantifying the financial risks and selecting mitigation strategies that include backup generation to reduce the impacts of outages. His work included conducting site visits, analyzing energy bills, and recommending mitigation efforts

Southern California Edison Standard Performance Contract Program. Phillip assisted with the design and implementation of SCE's Non-Residential Standard Performance Contract Programs. He developed pricing structures, participant qualifications, program implementation procedures, and measurement and verification guidelines. He also conducted workshops, provided engineering reviews and analysis of submittals, performed site inspections, and provided technical support for the program.

PacifiCorp SPC Program Study. Phillip provided an overview of California's Standard Performance Contract (SPC) program, other SPC programs around the country and recommendations for a pilot SPC program to be administered by PacifiCorp. His report included

program design issues, lessons learned during California's first year of implementation, and different SPC approaches being implemented by other utilities around the country.

Southern California Edison DSM Bidding Program. Phillip supported SCE's DSM Bidding program by reviewing M&V plans submitted by contractors, conducting site-inspections, tracking projects, and reviewing submittals and invoices from contractors. He assisted SCE staff in communication with contractors and resolution of implementation issues. He also assisted with program implementation and establishing procedures

Education

B.S., Mechanical Engineering, Oklahoma State University

Affiliations

Professional Engineer in the State of California
Member of ASHRAE

Jon Jutsen, President, ENVINTA

Jon is the President of EnVinta Corp, and founder of Energetics Pty Ltd in 1984. Energetics is the major energy management company in Australia and Thailand, and EnVinta is a global supplier of software and web-based solutions for energy and Greenhouse gas management. Jon is a recognized leading international expert on energy management with over 20 years' experience in the field.

Awards

1994. Shedden Pacific Medal & Prize - Institution of Engineers Award of Excellence in Chemical Engineering - for contributions to the field of Energy Management.

1999. 2 Professional Engineering Excellence Awards. (IEAust), including Professional Engineer of the Year.

Energetics also won many national awards for its contributions to energy management and innovation, under Jon's leadership through the 1990's.

2001. Invited member of the Academy of Technological Sciences and Engineering in Australia, for his contributions to the field of energy management.

2003. Awarded the Millenium Medal for his contributions to Australia in the field of Technological Sciences.

Summary of Experience

2002-Present. President of EnVinta Corp. and Executive Director of Energetics Pty Ltd.

1984 – 2001. Energetics Pty Ltd. *Chief Executive Officer.* He built and lead this 60 professional specialist energy consulting company. As head of Energetics, Jon consulted to corporations, governments, and utilities in Australia, SE Asia, US and UK for 18 years.

Jon was responsible for the development of Energetics' ground-breaking "EnVision" energy management methodology, and the One-2-Five diagnostic software that is becoming an international standard for rating and tracking energy management performance of major corporations and government agencies. He also designed the concept for the Enterprize product.

1980 – 1984. Energy Authority of NSW (Sydney). *Energy Policy Officer/Manager of Energy Management Advisory Service.* He had 2 years experience in State government in energy policy development, in which time he gained a detailed knowledge of the energy supply industry. He then managed the State Government's Industrial Energy Management Advisory Service (EMAS) for 2.5 years.

1978 – 1980. CIG Ltd (Sydney). *Plant Commissioning/Production Engineer.* Jon was with BOC for 2.5 years and was involved in commissioning air separation plants and worked on gas supply contracts.

Education

B.E. (Chemical Engineering), Honours I (First in Course - Abbott Laboratory Prize)

M.App.Sc (Fuel Technology)

Affiliations

Member of the Academy of Technological Sciences and Engineering in Australia

National Committee on Energy, Institution of Engineers Australia(Committee Chair for 2 years).

Fellow of the Australian Institute of Energy (Past Deputy Chairman, Sydney Group)

Served on many working committees including Sustainable Energy Fund Working Group, National Grid DSM Committee, and National Greenhouse Advisory Panel.

Publications

Jon has produced well over 100 papers and seminar presentations on all aspects of energy management, demand side management, energy policy and energy technology in Australia, New Zealand, South East Asia, the UK, and the USA.

Ed Smith, VP Solutions Implementation, ENVINTA

Ed is responsible for the international consulting arm of Energetics. This involves developing programs and initiatives within the international arena for the provision of Energetics' expertise, technology and tools. Ed is a General Manager within the consulting practice, as well as an Executive Director of Energetics.

Summary of Experience

2001 – Present. Energetics Pty Ltd – General Manager International Business Development. Reporting to Chief Executive Officer, Ed is responsible for the development of strategies and programs for taking the consulting practice into the international arena.

1998 – 2001. Energetics Pty Ltd – General Manager Australian Operations. Reporting to Chief Executive Officer, Ed was responsible for the development of new business, working with the business development team to conduct and coordinate sales activities in Australia, co-ordination of Resources and Projects in conjunction with the Regional Managers and developing Key Client relationships. Ed helped develop energy management programs that delivered long term sustainable improvements in energy usage and greenhouse mitigation.

1995 – 1998. Energetics Pty Ltd (Melbourne) – Regional Manager – Victoria. As Regional manager, Ed was responsible for the procurement and conduct of energy management work for our many national and local clients, as well as the continued support of the Regional operations. In this role, Ed was responsible for many major projects including Greenhouse Mitigation Programs, long term energy programs and plan development and the management of the Cleaner Production Demonstration Program.

1993 – 1995. Energetics Pty Ltd (Sydney) – Senior Process Engineer. Ed provided consulting services to several large industrial clients. These services include energy auditing, process integration and heat recovery projects as well as process engineering projects.

1991 – 1993. Linhoff March (Melbourne) – Process Integration Consultant

1989 – 1991. Rhone-Poulenc (UK) Ltd; Dagenham East, UK – Commissioning Engineer

1987 – 1989. Iscor Ltd; Vanderbijlpark, South Africa – Process Engineer

Education:

BSc (Chemical Engineering) – University of Cape Town, South Africa (1986)

Affiliations:

Member of the Institution of Engineers Australia

Member of the Institution of Chemical Engineers (UK)

Fabian Biagetti, VP Operations, EnVINTA

Fabian Biagetti is the VP Operations with EnVinta with responsibility over all aspects of program delivery. He has experience in energy consulting, project management and energy management for end-use customers nationwide. His expertise includes energy conservation and has extensive technical, industry, sales and professional development training. He is fluent in written and spoken Spanish.

Business Development. Managed all aspects of client services, including software customization as per customer specifications, installation onto customer platform, training client personnel and maintaining overall account profitability. Key customer clients include the US Environmental Protection Agency, Pacific Gas and Electric, Southern California Edison, Texas Utilities, and BC Hydro. Facilitated nearly 100 energy management diagnostics with executive decision makers of Fortune 1000 companies. Developed more than \$84 Million in end-use customer agreements to deliver comprehensive energy services to industrial and large commercial customers nationwide as part of the retail conduit for the Duke Energy family of companies.

Key account management. Managed and delivered consultative sales services to large retail customers with energy consumption totaling 1.2 billion kWh/year and constituting \$94 million in electricity sales. Leveraged technical marketplace and industry knowledge in communicating opportunities available in a restructured environment and positioned customers to accomplish specific competitive objectives. Achieved positive, innovative energy efficiency results in supermarket, entertainment, and banking segments by integrating corporate resources to meet customer needs. Developed account plans to fulfill specific customer and corporate objectives, particularly in regard to flexible pricing options, billing format alternatives, and load-growth opportunities. Maintained customer relationships and strengthened the Edison International brand quality name to increase penetration effectiveness of new and forthcoming products and services. Organized positioning workshops aimed at needs of grocery, dairy and department store customers.

Energy management. Created and implemented energy management strategy for a national chain of 314 retail outlets with 1995 utility expenditures exceeding \$10 million. Utilized cost-effective operational improvements, capital equipment upgrades, energy re-designs and control system applications to reduce electric and equipment repair expenses by \$986,000. Reviewed historical usage information, constructed load profiles, and identified energy conservation opportunities offering attractive investment criteria. Updated store construction specifications to reflect economically advantageous energy equipment. Negotiated \$1.8 million in equipment upgrade contracts and creatively structured a multi-store lighting retrofit project in the California market to maximize limited resources. Monitored electric industry deregulation and developed company strategy to take competitive advantage of increased buyer leverage.

Technical support. Provided technical support to commercial marketing programs, primarily retail energy use surveys. Designed and conducted technical and administrative seminars for field personnel and managers. Testified before the U.S. Department of Transportation in

Washington D.C. in association with EEI lobbying efforts regarding proposed electric equipment rule makings.

Summary of Experience

2000 – Present	EnVinta, Inc., Director of Client Services
1997 - 2000	DukeSolutions, Inc., Business Development Manager
1996 - 1997	Southern California Edison, Major Account Executive
1994 - 1996	Pic-N-Save/McFrugal's Stores, Inc., Energy Manager
1989 - 1994	LADWP, Engineer/Project Manager

Education

MBA, Organizational Management and Strategic Planning, Pepperdine University
 B.S., Civil Engineering, major field: Water Resources and Environmental Engineering, UCLA
 California Professional Engineer Candidate
 California Certified Engineer-In-Training

Publications

“Stone Canyon Water Quality Improvement Project EIR - Air Resources and Odor Generation”, Coalition to Preserve Open Reservoirs Meeting, Los Angeles, June 1, 1994.

“Stone Canyon Water Quality Improvement Project EIR - Noise Analysis”, Coalition to Preserve Open Reservoirs Meeting, Los Angeles, May 18, 1994.

“Case Studies in Formulating Pre-Construction Environmental Strategies”, Western Council of Construction Consumers’ Environmental Committee, Los Angeles, February 2, 1994.

“Oil Spill Prevention and Response Plans - Interim Final Rule Comments”, U.S. Department of Transportation, Washington, D.C., May 13, 1993.

“Implementing ENFLEX at the Facility Level”, Fifth Annual ENFLEX User’s Group Meeting, New Orleans, May 5, 1992.

VIII.A Budget Summary

Table VIII-1 presents a representative summary of the Energy MBA Program by task and major cost category. Because the workbook provide in CPUC Decision 03-08-067 does not readily allow for organization and presentation of costs by Program task, this summary may vary from the Program Implementation Workbook accompanying this proposal narrative. Such variances are generally negligible. In all such cases, figures presented in the Program Implementation Workbook will be considered final.

Table VIII-1: Energy MBA Budget Summary

Task/Activity	Labor hours	Labor Cost*	Other Costs	Total
Program Management Functions	576	\$92,160	\$328	\$92,489
Recruitment & Site Selection	150	\$25,726	\$684	\$26,411
Initial Mgt. Diagnostic & Site Review	1,500	\$251,516	\$6,159	\$257,675
Detailed Planning & Implementation				
• <i>Technical assessments</i>	600	\$90,458	\$6,159	\$96,617
• <i>Implementation support & coaching</i>	720	\$116,589	\$8,212	\$124,802
Repeat Diagnostics	320	\$51,818	\$4,106	\$55,924
Documentation & Reporting				
• <i>Monthly Reports & Invoices</i>	288	\$31,040	\$657	\$31,697
• <i>EM&V Draft & Final Report</i>		\$30,507		\$30,507
• <i>Program Draft & Final Report</i>	200	\$30,153	\$342	\$30,495
<i>Subtotal</i>	4,354	\$719,967	\$26,649	\$746,616
<i>Performance Award</i>		\$50,398	\$1,865	\$52,263
<i>Total</i>	4,354	\$770,365	\$28,514	\$798,979

* Labor costs represent fully burdened costs (i.e., including overhead and G&A) of both Nexant and EnVINTA, as described below

VIII.B Additional Line Item Budget Details

- Program Management Functions: budgeted at 24 hours per month for the 24-month duration of the Program, or a total of 576 hours of labor at the level of Principal and Project Manager. Periodic travel to attend CPUC briefings and other meetings is budgeted at an average of \$10 per month or \$240 in total. The ratio of Nexant to EnVinta labor is 80 percent.
- Recruitment and Site Selection: budgeted at 150 hours of labor for the duration of the task at the level of Principal and Project Manager. The budget estimates materials costs for marketing presentation materials of \$500. The ratio of Nexant to EnVinta labor is 50 percent.
- Initial Management Diagnostics and Site Review: budgeted at 50 hours of labor for each of 30 facilitated diagnostic and site review session, including preparatory time and presentation of results, for a total of 1,500 hours of labor at the level of Principal and

Project Manager. The budget estimates average travel costs of \$150 per session, including lodging, meals, and incidental expenses. The ratio of Nexant to EnVinta labor is 60 percent.

- Detailed Planning and Implementation (Technical Assessments): budgeted at 60 hours of assistance for each of 10 participants, for a total of 600 hours of labor at the level of Principal, Project Manager, and Senior Technical Specialist. Task labor is conducted primarily on site. The budget estimates average travel costs of \$450 per participant, including lodging, meals, and incidental expenses. The ratio of Nexant to EnVinta labor is 80 percent.
- Detailed Planning and Implementation (Implementation Support and Coaching): budgeted at 72 hours of assistance for each of 10 participants, for a total of 720 hours of labor at the level of Principal, Project Manager, and Senior Technical Specialist. Task labor is conducted primarily on site. The budget estimates average travel costs of \$600 per participant, including lodging, meals, and incidental expenses. The ratio of Nexant to EnVinta labor is 75 percent.
- Repeat Diagnostics: budgeted at 16 hours of labor for each of 20 facilitated diagnostic and site review session for a total of 320 hours of labor at the level of Principal and Project Manager. The budget estimates average travel costs of \$150 per session, including lodging, meals, and incidental expenses. The ratio of Nexant to EnVinta labor is 75 percent.
- Documentation and Reporting (Monthly Reporting and Invoicing): budgeted at 12 hours per month for the 24-month duration of the Program, or a total of 288 hours of labor at the level of Project Manager and clerical staff. Materials costs for printing and copying are estimated at \$20 per month or \$480 in total. The ratio of Nexant to EnVinta labor is 75 percent.
- Documentation and Reporting (EM&V Draft and Final Report): budgeted as \$30,507 for subcontractor costs. Primary data collection occurs within diagnostic sessions and does not require additional Nexant or EnVinta labor.
- Documentation and Reporting (Program Draft and Final Report): budgeted at 200 hours of labor for the duration of the task at the level of Principal, Project Manager, and Senior Technical Specialist. The budget estimates materials costs for printing and copying of \$250. The ratio of Nexant to EnVinta labor is 80 percent.

VIII.C Explanation of Allocation Methods

It is not feasible to categorize Nexant's allocated costs according to the budget items as described in the standard workbook format provided in D.03-08-067. As provided for in the Proposal Instructions, the following description details Nexant's cost allocation methodology.

Combined Overhead (OH) and General & Administrative (G&A) Rate on Nexant Labor is 177%. Nexant's OH and G&A Forward Rates for Fiscal Year 2003 are 102.36% and 36.87%, respectively. These rates have been filed with the Defense Contract Audit Agency (DCAA)

Office and our Commanding Officer (CO). Nexant pools all of its indirect expense and allocates the expenses to all Direct Projects.

Nexant's OH rate includes costs for non-Corporate employees such as Fringe Benefits, Facilities Allocations, Office Expense Allocations, Employee Management and Training Expenses. These expenses are allocated to all Direct Projects as a rate applied to Direct Labor.

Nexant's G&A rate includes similar expense types (to OH rate) related to Corporate employees. Corporate functions as defined by Nexant's rate structure include Corporate Management, Human Resources, Information Technology, Finance & Accounting, and Legal. These expenses are allocated on a Total Cost (less Material and Subcontractor expenses) Input basis to all Direct Projects and Overhead Projects.

G&A Rate on Nexant ODCs (not including Materials, Equipment and Subcontractor Expenses) is 36.87%. (See above for Rate Explanation.)

Material and Subcontractor Handling rate on Nexant Equipment, Materials and Subcontractor Expenses is 1.69%. Expenses related to the procurement of equipment & materials and the issuance & management of subcontracts are pooled and allocated ratably to the Direct Projects that incur these types of expenses.



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