ENERGY WORKFORCE SECTOR STRATEGY

Sector Strategy Implementation

Research Phase 2

October 2012

Contents

Introduction

PG&E is committed to an Energy Workforce Sector Strategy (EWSS) that will accelerate progress toward AB 32 carbon reduction mandates. Specifically, EWSS will develop a workforce to (1) increase market adoption of more energy efficient solutions in commercial and industrial buildings and (2) remove potential barriers associated with inadequate workforce capacity and capabilities. This strategy aligns with the California Public Utilities Commission (CPUC) mandates established in the California Energy Efficiency Strategic Plan [1] (CEESP) and the Statewide Workforce Education and Training Plan [2] (WE&T). Implementation is compliant with the CPUC's Decision Providing Guidance on 2013-2014 Energy Efficiency Portfolios and 2012 Marketing, Education, and Outreach [3], released in March 2012.

Scope

This document describes Phase 2 of PG&E's research project for developing the nonresidential energy efficiency workforce. EWSS builds upon lessons learned and best practices of other Sector Strategy models such as those adopted by the California Advanced Lighting Controls Training Program (CALTCP), Builder Operator Certification (BOC), PowerPathway™, California Workforce Investment Board (CWIB), and other implementers in California. It provides new research and stakeholder engagement to inform PG&E's plans through 2014, setting specific targets for higher market adoption rates via programs that upgrade and leverage new workforce knowledge, skills, and abilities.

EWSS is a multi-year program that will achieve specific energy efficiency workforce development goals by the end of 2014. This Phase 2 Research Plan follows an initial period of stakeholder engagement and implements a platform in 2012 that will inform PG&E's strategy for 2013-2014.

Foundational Activities

Launched on February 29th, 2012, EWSS has engaged approximately 120 stakeholders from industry, education, the state workforce system, community-based organizations, the CPUC, and the California Energy Commission (CEC). In order to more precisely frame stakeholder engagement, EWSS augmented WE&T research with the following:

- Workforce analysis by Economic Modeling Specialists, Inc. (EMSI) provided estimates of workforce supply versus demand. The result was projections through 2016 for PG&E's service territory across 60 different occupations in 13 industries engaged in commercial / industrial energy efficiency products and services.
- Interviews with more than 50 energy efficiency employers built a broad basis for workforce development priorities.
- Focus groups with more than 100 representatives from industry, education, Labor and the workforce investment system identified priority occupations, skill requirements, barriers to workforce development, and collaboration models that would accelerate market adoption.
- Surveys of 22 top-performing energy efficiency professionals characterized their functions in driving market adoption. These surveys identified the education and work experience needed to define the top end of career ladders (or lattices) through which energy efficiency workers can progress.

- Top tier energy efficiency programs were identified in the California Community Colleges and California State Universities. This research characterized the most relevant educational and training resources that can be aligned with and leveraged by EWSS.

The Need

Based on a significant number of interviews with employers and industry professionals, EWSS is approaching the full spectrum of nonresidential energy efficiency workforce needs as generalized in the model shown in Figure 2.

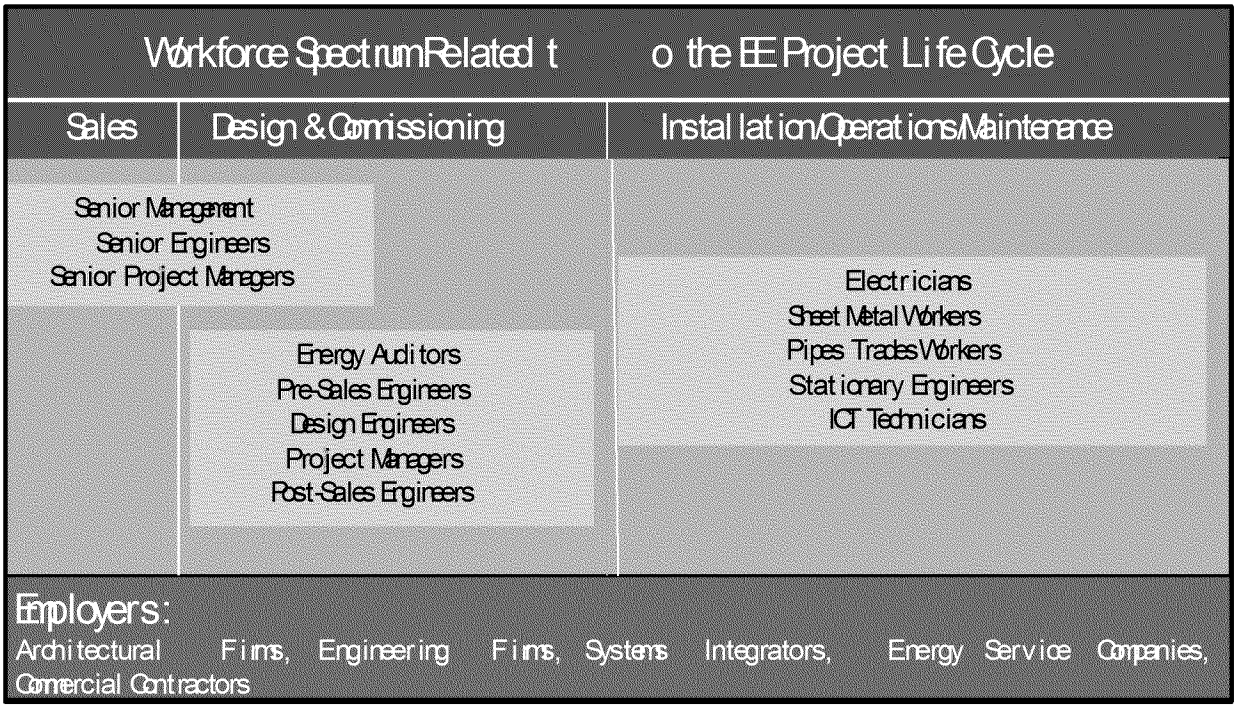

Figure 1. Workforce Spectrum Overlaid on the Energy Efficiency Project Life Cycle

The WEST and EESI studies projected gaps between supply and demand for energy efficiency workers, with WEST pointing out the additional need for up-skilling incumbent workers. EWSS stakeholders confirmed the need for a dual track to: (1) build a pipeline of new entrants into energy efficiency career fields and (2) train incumbent workers. Figure 1 displays the job demand analysis developed by EE based on the 13 energy efficiency industry segments within the scope of their study.

Highest Demand Occupations 2012 - 2016			
Description	Annual Openings	% of Occupation	Skill Category
Civil Engineers	316	52%	Engineering
Electricians	294	46%	Construction
Architects, except landscape and naval	215	76%	Design
Plumbers, pipefitters, and steamfitters	132	35%	Construction
Managers, all other	109	29%	Operations
First line supervisors/ managers of construction trades and extraction workers	94	18%	Construction
Carpenters	82	13%	Construction
General and operations managers	81	3%	Energy Assessment
Construction managers	73	17%	Energy Assessment
Engineers, all other	46	17%	Engineering
Mechanical engineers	06	22%	Engineering
Heating, airconditioning, and refrigeration mechanics and installers	59	27%	Tech & Install
Engineering managers	59	16%	Engineering
Construction and building inspectors	64	33%	Construction
Sheet metal workers	45	31%	Tech & Install
Cost estimators	42	19%	Construction
Electrical engineers	42	17%	Engineering
Accountants and auditors	32	1%	Finance
Business operations specialists, all others	29	1%	Energy Assessment

Table 1. Energy Efficiency Jobs Projection, BW SI 2012

Among the conclusions that can be drawn from Table 1 are (1) certain occupations, such as Architects, are expected to see growth that is a large percentage of their current participation in the energy efficiency sector, and (2) forty percent of the job openings are projected for engineering and desig occupations versus 35% for construction and technical trades and 20% for operations, business, and finance.

From the BW SI research, one can also infer competition for workers across a broad group of industries, all of which have demand for skills needed for the energy efficiency sector. Figure 2 is a real-time demand analysis of a broader group of energy efficiency employers, including manufacturers and supply chain companies. Thus, employers like P&E's third party implementers [4], must recruit from a talent pool that is being tapped by hundreds of other companies. This snapshot of job postings also is indicative of the nascent state of the energy efficiency sector.

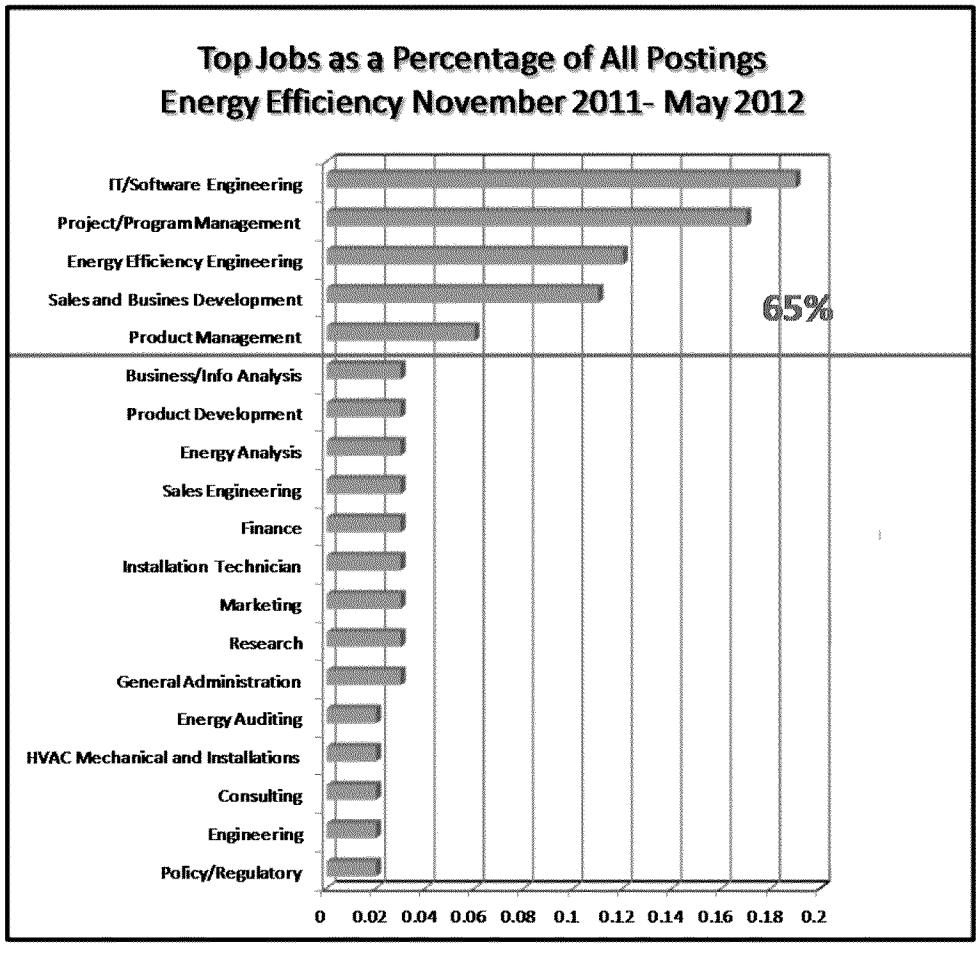

Figure 2: SolarTech Bay Area Energy Efficiency Jobs Summary, Q2-2012

As shown in Figure 2, sixty-five percent of energy efficiency job postings in the Bay Area during Q were for professionals, representing the leading edge of market adoption. Installation jobs accounted for six percent of postings during this period, indicating that workforce supply is essentially meeting demand. One possible inference is that the sector is still at a nascent stage where a much greater emphasis is on jobs that can increase market adoption than on those required for installation.

Competitive elements, along with the need for incumbent training, portray a supply / demand picture that is difficult to quantify. For this reason, EEWSS collaborated with industry stakeholders to align workforce development with their priorities, using VEE&T and EEMSI as a backdrop. Feedback from EEWSS industry stakeholders indicates that the mix of job openings is still in evidence. A workforce capable of increasing market adoption rates was the consistent theme repeated by these industry stakeholders as the primary driver for investing in education and training.

Guiding this investment strategy is a focus on occupations with high impact on market adoption rates, with support of the full workforce spectrum in support of this strategy.

Considering all of the above perspectives, EEWSS stakeholders identified their top priority workforce needs as follows:

Demand Creation

Industry stakeholder interviews provide evidence that many of the market drivers are not understood well enough to overcome building owner resistance to improving energy efficiency. Thus, sales and business development workers are the top priority among the vast majority of energy efficiency employers that have engaged with EMS. These employers typically do not have dedicated sales people but rely on executives and senior engineering and project management personnel for business development activities. These professionals need enhanced skills in gaining commitment by building owners and managers (typically C-level executives or facilities managers) to invest in energy efficiency solutions. Research in Phase 1 indicated that these professionals typically had advanced degrees and more than 15 years experience in energy efficiency. Accordingly, the EMS demand creation workforce need involves highly sophisticated skills and knowledge to target the best opportunities and to better articulate energy efficiency solutions. The challenge is to develop new marketing and sales skills, effectively bridging four distinct gaps.

Gap 1: Marketing Training – analytics, segmentation, messaging tailored by segment
Target Audience: Senior-level industry professionals

Gap 2: Sales Training – C-Level / Facilities Manager relationship skills, consultative selling
Target Audience: Senior-level industry professionals

Gap 3: Sales Training - consultative selling coupled with core financial and technical elements
Target Audience: Incumbent energy efficiency professionals seeking senior positions

Gap 4: Sales Education - perspectives in energy efficiency financial and technical elements
Target Audience: Students in community college and university programs

Enhancing industry stakeholders' ability to market and deliver higher market adoption rates is a key factor in meeting AB 32 goals. Additionally, the workers engaged in demand creation will lead market development, opening career opportunities for workers across all occupations. These are "jobs that create jobs". The scope of this challenge is significant. During the 2012-16 timeframe, EMS projects an annual shortage in PG&E service territory of more than 7,000 new sales and business development workers within the 13 target industries.

Capacity

As the market develops, the supply of workers in positions needed to support growth will determine the sector's overall market adoption rate. While programs are in place to educate or train these workers, gaps exist in the community college and CSU systems' overall capacity for the knowledge, skills, and abilities required by employers.

As two specific examples, EMS stakeholder focus groups resulted in a priority for new capacity in engineering and energy auditing positions. WE&T and EMSI research show small gaps or even a surplus of engineers, but an analysis of CSU programs shows that few engineers are being prepared for careers in energy efficiency. Commercial energy auditors don't show up in the research because the occupation

is too new to be recognized by O*NET or other classification systems, and only now are a few training programs emerging.

> Gap 5: Engineers - training capacity in energy efficiency technology, systems, and economics
> Target Audience1: Incumbent engineers with up-skilling needs
> Target Audience 2: Dislocated and career-changing engineers
>
> Gap 6: Energy Auditors - training in data analytics, technologies, systems, codes, and standards
> Target Audience: Dislocated technical workers and career changers

Adding job openings to attrition and retirement numbers, the EMSI research projects significant shortages in seven key occupational categories as reflected in Table 2.

Occupation	Annual Worker Shortage in 13 Industries PG&E Service Territory 2012-2016
General Construction	844
Electronics Technician	472
Plumber	290
Quality Control	219
Electrician	148
Electrical Engineering Technician	88
Electromechanical Technician	73

Table 2: Annual Worker Shortage in Key Occupations, 2012-2016

> Gap 7: Skilled technical workers - training capacity in specific skills categories
> Target Audience 1: Dislocated technical workers and career changers
> Target Audience 2: Students in Career Technical Education[1] or JATC programs

These gaps need to be filled to assure that design, installation, operations, and maintenance capacities for energy efficiency solutions are adequate to support higher market adoption rates.

Additional occupations to be tracked are those requiring knowledge, skills, and abilities that cross multiple training domains. An example is information and communications technology (ICT), which is becoming more integrated into environmental control technologies involving HVAC, lighting, and building automation systems. Traditional roles are being challenged as sheet metal, electrical, and pipes trades all involve some degree of ICT integration. EMSI projects a shortage of some 7,000 workers annually in the broad category of Computer Science across 13 industries in PG&E's service territory during 2012-16.

> Gap 8: Incomplete knowledge of training requirements for ICT integration
> Target Audience: To be determined

Compliance Skills

Compliance training is essential to realizing the energy efficiency benefits projected in investment decisions by market adopters. Without new business cases demonstrating actual carbon reduction benefits, cash flow improvement, and return on investment, market adoption likely will continue on current trajectory or perhaps slow down.

Success of the CALCTP initiative provides a solid model for developing an EWSS strategy across the commercial and industrial energy efficiency landscape.

> Gap 9: Compliance skills training across the spectrum of commercial / industrial energy efficiency, consistent with codes, standards, and best practices.
> Target Audience: To be determined

Compliance is a difficult issue for workforce development in many energy efficiency technologies. While CALCTP has achieved agreement among many disparate parties and enabled a standardized training approach across the state, the problem of compliance standards still needs to be addressed beyond lighting control technologies. EWSS is tracking the progress in other energy efficiency areas such as HVAC to determine the proper timing to begin more fully defining compliance training requirements.

Strategic Direction

Overarching Theme:

The Energy Workforce Sector Strategy focuses new and existing education and training initiatives to accelerate energy efficiency workforce development in support of California's AB 32 carbon reduction goals. Specific initiatives form a well-integrated strategy to meet those goals:

- Driving demand creation via investments in sales and business development workers.
- Assuring workforce capacity in engineering, auditing, and skilled trades occupations to suppo higher market adoption rates.
- Building stronger linkages between education programs and compliance with codes, standards, and best practices that assure carbon reduction goals and financial goals are met.

This data-driven strategy encompasses up-skilling of incumbent workers, re-purposing of careers for dislocated workers and career changers, and enhancing education programs to build the pipeline of n energy efficiency workers. To the extent possible, the strategy leverages relevant programs at community colleges, universities, and JATCs.

Proposed 2012 Outcomes

1. Completed pilot training of incumbent professionals engaged in demand creation (Gaps 1-4)
    a. Measurable up-skilling in areas identified by stakeholders

   b. Basis for refinement and expansion to follow-on cohorts
   c. Foundation for academic programs to build a pipeline of new demand creation workers
2. Recommendations for capacity expansion in training for key occupations (Gaps 4-8)
   a. Programs that can produce additional engineering and energy auditors
   b. Programs that can produce additional workers as identified in Table 1
   c. Funding requirements to add capacity per these recommendations
3. Recommendations for new compliance programs (Gap 9)
   a. Linkage to CALGP and expansion as required
   b. Linkage to WE&T HVAC sector strategy
   c. Linkage to other codes and standards as appropriate
   d. Funding requirements to implement these recommendations
4. Measurement of the impact of EWSS in 2012
   a. Market transformation metrics
   b. Program performance metrics
   c. Methods to evaluate workforce outcomes
5. Recommendation of the platform for EWSS in 2013-2014
   a. Aligned with CEESP, WE&T, and March 2012 CPUC guidance
   b. Informed by 2012 EWSS outcomes
6. Publication of a primer on effective planning and execution of a Sector Strategy
   a. Informed by 2012 EWSS research and planning
   b. Conclusions and lessons learned from 2012 EWSS execution and measurement

Proposed Workforce Training

A significant foundation is in place to address the workforce gaps identified in the Needs section. EWSS will work with the community college and CSU systems to augment or create training programs to bridge Gaps 1-9, beginning with the Proposed 2012 Outcomes defined in the previous section, and continuing through 2013-2014. In addition, EWSS has engaged with the National Electrical Contractors Association (NECA) to develop responsive workforce strategies in 2012 that can be implemented by the Joint Apprenticeship Training Centers operated by the International Brotherhood of Electrical Workers (IBEW). Engagement with other Labor Management Coordinating Committees (Sheet Metal, Stationary Engineers, etc.) is under consideration for 2013-2014 planning.

Addressing the Full Workforce Spectrum

2012 began a synchronized process to increase demand creation, add capacity and build higher levels of compliance through an integrated energy efficiency training portfolio as illustrated in Figure 3.

EWSS also documents existing energy efficiency career pathways in the community college and CSU systems as a first step in bolstering those pathways over time. The objective is to create a system of professional development for key occupations that will evolve in response to industry needs. Initial research shows that there are many courses available across most of PG&E's service territory. Ongoing research through the end of 2012 will identify gaps in education and training pathways as related to workforce demand.

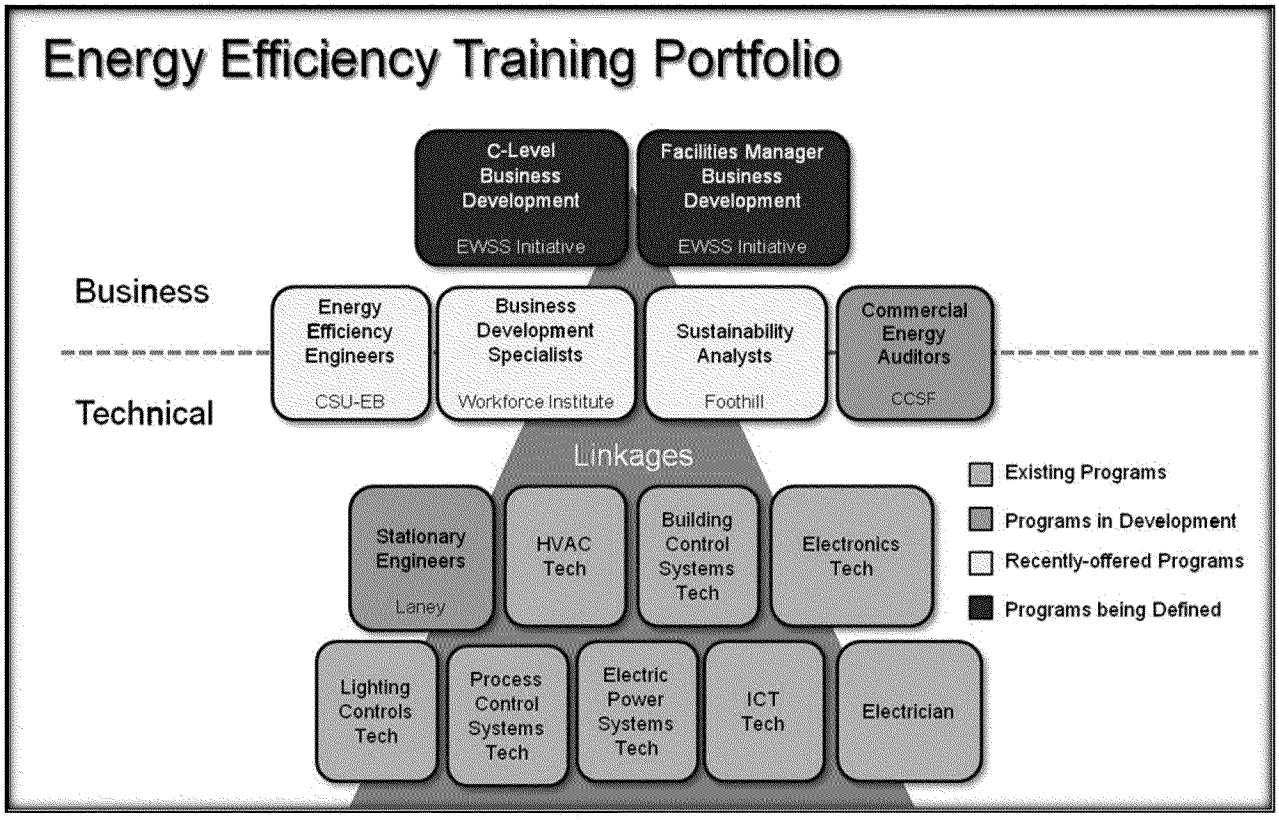

Figure 2. Integrated Energy Efficiency Training Portfolio

New business courses are being defined to prepare senior energy professionals for increasing demand creation and market adoption. Existing courses that combine technical and business elements will be joined by a new energy auditor course, all aimed at skills development for energy professionals in the analysis, design, and justification of energy efficiency projects. Training programs for technical and skilled craft workers will be defined to address capacity and for the inclusion of new codes, standards, and best practices.

The objective is to create a more robust ecosystem where increasing market adoption rates are supported by a larger, more professional workforce that can assure financial returns for building owners while meeting expected or exceeding energy efficiency targets.

Meeting the Need through Career Pathways

EWSS Research Phase 2 establishes the basis for plans that will leverage existing energy efficiency pathways through the community college and California State University systems, providing linkages to the public K-12 education system and the Joint Apprenticeships Training Committee frameworks.

This research will correlate programs at education and training institutions with projected job openings for the top 20 occupations identified by EMSI as having the highest demand during 2012-16. For purposes of this research, the correlation is made on a county-by-county basis throughout PG&E's service territory, overlaying current career pathways and the pattern of job openings for the top

highest demand occupations. This process is expected to produce a roadmap for a well-integrated framework of courses and programs that correlate to job demand.

Existing career pathways will be mapped at selected educational institutions, providing students with a clear view of training available for entry into specific careers. Employers will benefit from these maps, enabling to develop strategic partnerships with colleges and universities that produce workers for their priority job openings.

The research will further identify courses that can make pathways, citing articulation agreements among the CSUs, community colleges, and public K-12 systems where those articulations have been approved. Gap analyses will identify the need for additional courses to better match the current pathways to projected job openings.

An expanded role for the Pacific Energy Center will be developed. Linking awareness and information training to specific degree and certificate programs, the Center will function as a gateway to career paths in the public postsecondary education system.

Demand Creation: Bridging Gaps 1-4

Two new business courses are planned for Senior Energy Professionals engaged in business development and marketing. Providing new skills for improving adoption rates, these courses focus on (1) effective consultative selling to C-level executives and facilities managers, and (2) advanced techniques for market analysis and segmentation. This training is aimed at the senior management and executive workers who are already engaged in business development activities as a major part of their job.

An initial seminar course will be held in the fall of 2012 that combines elements of both sales and marketing. Feedback from senior business development workers attending this one-to-three-day pilot course will drive definition of follow-on course development. Expansion in 2013-2014 is planned for coverage of senior business development workers across PG&E's service territory. Coinciding with expansion is a plan to build this training into mainstream college and university programs to address the growing need for a pipeline of new business development workers.

Deliverable 1: A pilot seminar course in demand creation to be attended by up to 20 senior energy professionals engaged in business development. (Gaps 1 and 2)
Deliverable 2: Recommendation of enhancements for existing business/technical courses, linking demand creation concepts to training for engineers, business development specialists, sustainability analysts, and energy auditors. (Gap 3)
Deliverable 3: Recommendation of career pathways for a pipeline of senior energy professionals engaged in business development and engineering. (Gap 4)

Capacity Planning: Bridging Gaps 5-8

This aspect of EWMS addresses the need for more trained workers across the PG&E service territory. identifies occupations where greater capacity and broader geographic coverage are needed. Guidance will be offered through the Advisory Council to participating education partners (UCs, CSUs, community colleges, and IBEW JATCs). Implementation is planned to begin in 2013, through individual curriculu advisory councils that are in place for participating educators.

> Deliverable 4: Recommendations for capacity additions in training and education programs for (a) engineering, (b) energy auditors, (c) skilled technical workers, and (d) ICT curriculum as it applies to nonresidential energy efficiency. (Gaps 5-8)

Compliance: Bridging Gap 9

The California Advanced Lighting Controls Training Program (CALCTP) is a good model for compliance training as a means to achieve the financial and energy efficiency goals of building owners and managers. EWMS has adopted this model and is expanding upon it. New codes, standards, and best practices identified by CALCTP for advanced lighting controls will be applied in EWMS work with NECA/IBEW as needed, and expanded to non-union contractors and workers through the community college system. EWMS will also monitor new codes, standards, and best practices for heating, ventilation, and air conditioning (HVAC) for future application with participating educators.

> Deliverable 5: Recommendations for (1) expansion of CALCTP to engage more contractors in business training, and (2) integrating HVAC and other codes, standards, and best practices into specialized courses and career pathways. (Gap 9)

Additional Project Deliverables

EWMS will complete the following deliverables in completing the 2012 Workforce Training Plan and preparing for 2013-2014:

> Deliverable 6: Measurement and evaluation of EWMS programs in 2012 in the areas of (a) market transformation, (b) program performance, and (c) workforce outcomes.
>
> Deliverable 7: Recommendation of 2013-2014 EWMS programs.
>
> Deliverable 8: A primer on successful implementation of a Sector Strategy.

Project Plan

A three-part approach comprises the 2012 EWSS Project Plan:

Steering Committee

Stakeholders from industry, education, and the workforce investment system inform and guide EWSS project direction in accordance with industry priorities. It also directly informs curricula related to training for demand creation (Gaps 1-4). This committee meets three times during 2012:

- August - refinement and approval of the EWSS Project Plan
- November – update project direction; refinement and approval of demand creation training
- December – preliminary review of 2012 results and metrics

Advisory Council

This EWSS Advisory Council informs and offers guidance to participating educators for adopting EWSS programs and curricula. Comprised of subject matter experts from industry, education, the workforce investment system, and government agencies, this body advises the EWSS implementation team on curriculum and practical aspects of facilitating its acceptance by educators.

Each educational institution maintains its own individual advisory councils that guide course offerings. The EWSS Advisory Council provides new information, and potentially curriculum and resources, to assist the educators' dialog with their advisory councils in adopting EWSS recommendations.

Implementation Team

An implementation team, led by Lisa Shell of the PG&E PowerPathway team, is responsible for managing delivery of all EWSS elements:

1. Developing the project plan and gaining approvals as required.
2. Completing the Project Plan deliverables
3. Facilitating Steering Committee and Advisory Council meetings
4. Assisting in development and execution of the communication plan that informs all stakeholders

Contacts

Lisa Shell
PG&E Workforce Development
L1sh@pge.com
(415) 407-1831

Jim Caldwell
PG&E Workforce Development
Jqca@pge.com
(925) 899-2665

Acknowledgements

PG&E is grateful to the following organizations for their guidance in developing this Energy Workforce Sector Strategy:

- Energy Division
  California Public Utilities Commission

- Don Vial Center on Employment in the Green Economy
  UC Berkeley Center for Labor Research and Education

- Northern California Chapter
  National Electrical Contractors Association

- California Advanced Lighting Controls Training Program
  IBEW-NECA Labor Management Coordinating Committee

- Workforce Incubator

Appendix 1. Sector Strategy Definition

This section defines sector strategies in three contexts: (1) generically, (2) as intended by WE&T, as applied by PG&E's Energy Workforce Sector Strategy (EWSS).

Common Definition

Sector strategies are initiatives that promote regional partnerships of employers, educators, workforce developers, and other stakeholders that address the skills needs of a critical industry in a region. They are focused on one critical industry; are led by a strategic partner who coordinates dialog and action; and result in customized solutions to the workforce needs of employers in that industry. They are a proven mechanism for meeting the needs of workers for good jobs and the needs of employers for skilled workers[6].

WE&T Intended Use of Sector Strategies

An effective Sector Strategy provides a platform from which workforce outcomes may be better achieved and sustained for the long-term. Specific goals and objectives must be clear in identifying specific goals and objectives, including but not limited to

- Refined collaboration with stakeholders in support of the California Energy
- Efficiency Strategic Plan (CEESP).
- Broader strategic collaborations to implement WE&T plans and Needs
- Assessment recommendations
- Strengthened connection between training and employment sectors
- General Objectives from a WE&T Sector Strategy approach are:
    - easier industry adoption of training standards implemented in WE&T
    - improved quality of workforce and work performed
    - increased linkage with resource program goals/objectives
    - clearer model for quickly responding to industry workforce training demands

WE&T Defined Target Segments

Trades Category	Professional Category
Lighting / Day-lighting	Codes & Standards Enforcement Agency
HVAC	Architecture/Engineering/Design
Building Management	Lighting Design/Consultants
Building Maintenance	Sustainability/Consultants
Small/Medium Building Audit	New Construction
Manufacturing/Automation	Food Service

Appendix 2. Initial Stakeholders

Strategic Stakeholders for EM&S

- Investor-owned and Municipal utilities
- Local government
- Building inspection agencies
- Community Colleges
- Universities
- Industry associations
- Trade organizations
- Contractor associations
- Community-based organizations
- Certification bodies
- Workforce Development Agencies
- WE&T statewide task force

Individual Stakeholder List (From February 29th Convening)

PG&E

- Customer Care Line of Business
- PowerPathway™ team

Industry

- AESC
- Air Power USA
- Base Energy
- BKI
- Clear Wall
- Ecova
- IESA
- Electric & Gas Utilities Association
- Emerging Technology Associates
- Energy Commercialization
- EnerNoc
- Henkels & McCoy
- Honeywell Utility Solutions
- KEMA
- Lawrence Berkeley National Laboratory
- Lockheed Martin
- Marina Mechanical
- Matrix Energy Services
- MCS Communications
- NECA-IBEW
- Nexant
- Ols Controls
- Onsite Energy Corp
- PECI
- Resource Solutions Group
- RHA
- SMUD
- SoCal Gas Company
- SolarTech
- Southern California Edison
- Strategic Energy Innovations
- Synergy Companies
- TEAA
- VaCom Technologies

Education

- California Community Colleges
- California Corporate College, CCCEWD
- City College of San Francisco
- Contra Costa College
- CSU Chancellor's office
- CSU East Bay
- CSU Sonoma
- Diablo Valley College

Fresno City College
Kern Community College District
Laney College
Ohlone College
SF State Extended Learning
Skyline College
UCB Don Vial Center
UC Berkeley Extension
West Valley College
Workforce Institute

Labor

CA. Bldg. Performance Contractors Assoc.
Sheet Metal Workers 104
Sacramento Area Electrical Apprenticeship

Workforce System

Alameda County WIB
Central Valley Opportunity Center
City of Richmond
Contra Costa County WDB
MCS Career Group
Workforce Development San Mateo County

State Agencies

California Energy Commission
California Public Utilities Commission
Division of Apprenticeships Standards

Other Workforce Stakeholders

California Smart Grid Center
Center for Energy Workforce Development
Ecology Action
ICF International
Innovation Tri-Valley
The Intelleto Advantage
Workforce Incubator

Appendix 3. Background Research

A key factor in workforce planning is a supply versus demand analysis. In an emerging market like energy efficiency, the equation becomes more complicated. Market adoption is a key variable that drives demand, which makes workforce projections in emerging markets very difficult. In addition, training continues to be a moving target as workers must develop new knowledge, skills, and abilities address evolving technology and regulatory environment. With these factors in mind, two research reports have defined the workforce need to be addressed by EMSI:

> The Don Vial Center on Employment in the Green Economy at UC Berkeley published Education & Training Needs Assessment [vii] in March 2011. This is the definitive document driving the CPUC's guidance to the IOUs across a broad spectrum of energy efficiency workforce education and training. Priorities for workforce development were commercial and residential HVAC, commercial lighting, and residential home retrofits.
>
> Electronic Modeling Specialists Inc. (EMSI) published Energy Efficiency Sector Alignment – An Analysis of Key Occupations & Education Programs Supporting Energy Efficiency Industries in February 2012. This report was prepared to determine target occupations for PG&E's Energy Workforce Sector Strategy. Its focus was on workforce development for energy efficiency in commercial and industrial buildings.

Analysis of these two studies, plus interviews with more than 50 executives in the energy efficiency space for commercial / industrial buildings, identified factors affecting demand. Additionally, focus groups involving more than 100 stakeholders were held in February 2012 to gain management-level insights into workforce demand from a broad cross-section of industry, education, Labor and the workforce investment system.

Both studies also addressed supply side factors.

End Notes

[1] http://www.cpuc.ca.gov/NR/rdonlyres/A54EB9C2-D571-440D-9477-336372 6F573A/0/CAEnergyEfficiencyStrategicPlanJan2011.pd

[2] http://www.irle.berkeley.edu/vial

[3] http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/116 6830.htm

[4] http://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/partnersandtradepros/eeis/search/third party programs fs.pdf

[5] SolarTech Job Posting Study: Energy efficiency – total unique Q4 2011 postings: 326
Sources of Data: employer websites, Craigslist, SimplyHired, LinkedIn
Regional Scope: San Francisco Bay Area (includes North Bay, East Bay, San Francisco, Peninsula, and South Bay)

[6] www.sectorstrategies.org

[vii] http://www.irle.berkeley.edu/vial/