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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Examine the Commission's post-2005 Energy Efficiency Policies, Programs, Evaluation, Measurement and Verification, and Related Issues.

Rulemaking 06-04-010
(Filed April 13, 2006)

**ADMINISTRATIVE LAW JUDGE'S RULING SOLICITING
QUESTIONS ON ENERGY EFFICIENCY PROGRAMS AND
STRATEGIES WORKSHOP TOPICS**

This ruling seeks parties' responses to questions that arise from the discussion in workshops held in May and June on various issues relating to the utilities' energy efficiency portfolios and strategic planning.¹ The workshops were useful in providing information, concerns and ideas to the parties and the Commission in this effort to establish a program and policy framework for the utilities' 2009-11 energy efficiency portfolios and longer term strategic planning. The filed responses to the questions in this ruling will comprise the partial or complete record in the proceeding on the relevant topics.

**I. Questions Regarding Energy
Efficiency Programs and Strategies**

The Commission's recent workshops in this portion of this proceeding provided background information about energy efficiency programs, explored

¹ On June 1, 2007, the assigned Commissioner issued a ruling seeking responses to questions concerning updating utility energy savings goals, which was a topic of the May workshop. Parties filed comments on June 18, 2007.

the prospects for four Big Bold Energy Efficiency Strategies (BBEES) described in the assigned Commissioner's May 24, 2007 ruling, and considered some issues relating to future strategic planning and marketing.

The following poses a series of questions regarding these energy efficiency program strategies. The first set are posed questions for each of the four BBEES, followed by a second set of more specific questions for each BBEES. The third and fourth sets of questions concern strategic planning and marketing.

A. Big Bold Energy Efficiency Strategies

In her May 24, 2007 ruling, the assigned Commissioner identified four BBEES for further exploration: Residential New Construction, Commercial New Construction, Industrial Programs and Heating, Ventilation, Air Conditioning Programs (HVAC). Each of the first set of questions below should be answered separately for each of these four BBEES. Parties who wish to propose alternative major energy efficiency program elements may do so and should use the following questions to frame their support for program proposals.

1. Is the strategy viable in whole or in part? Should the Commission adopt it as a high priority target?
2. What is the likely impact of this energy efficiency strategy in terms of energy savings, market transformation or other effects?
3. Would the strategy likely be cost-effective?
4. How would the proposed strategy serve policy objectives other than resource adequacy, such as environmental impacts, total reduction in greenhouse gasses, customer bill reductions, equity and community development?
5. What could be and should be the utilities' role in funding, designing, implementing, and delivering elements of strategy?

6. What should or could be the role of other market players, governmental bodies and individuals in strategy development, design and delivery of the component program(s)?
7. How could the strategy best coordinate with and leverage the work of other governmental and commercial entities in developing, designing, and delivery activities?
8. What are the potential barriers to the success of accomplishing the strategy? (Institutional, technical, political, legal) For each, what Commission or other policies or rules could be or should be changed to overcome specified barriers and then more successfully achieve the strategy?
9. How might case studies or evaluations be used to improve implementation activities and market response?
10. What kind of forum, if any, is needed to convene market, utility, and government participants and oversee progress toward approaches for reaching strategy goals and objectives?
11. How should participants evaluate whether collaboration and coordination among market and government program participants have been useful?

B. Questions Specific to Each BBEES Program

The following sets of questions concern each individual BBEES program proposed by the May 24, 2007 assigned Commissioner ruling:

Commercial New Construction

1. What state, market or utility actions would encourage the incorporation of increased energy efficiency levels into “standard practices” and minimum building standards promulgated by the California Energy Commission?
2. Should the Commission set a near-term goal of 15-30% increased savings over 2005 Title 24 standards for new commercial structures? If so, by what date?

3. What specific market, state policy, or utility program energy efficiency initiatives might motivate owners and tenants to specify high performing buildings, integrated design approaches, and post-occupancy commissioning and feedback to design and construction teams?
4. How can commercial building energy efficiency R&D, emerging technologies activities, systems integration efforts, technology demonstrations and professional education and training be better integrated into market mechanisms, utility programs and/or improved and enforced building codes and standards so as to achieve energy efficiency by 2030 that is 50% to 80% better than 2005 Title 24 standards?
5. Would uniform energy benchmarking or a disclosure system for commercial buildings promote more energy savings? If so, how should that system be developed and implemented?

Heating, Ventilation and Air Conditioning

1. Are energy efficient air conditioning technologies available that are suitable to high temperature regions in California? If so, what barriers exist to installing related equipment to meet peak savings goals and what can or should be done to overcome them?
2. What steps should be taken to improve compliance with HVAC standards? What, if any, forum would improve such compliance and who should participate in this effort? How should industry representatives and governmental agencies participate?
3. What technologies, testing procedures, diagnostic tools need to be incorporated into the overall strategy for high-performance HVAC?
4. How would contractor and technician training affect the success of related HVAC programs? How should the expected benefits of training be verified and measured?
5. What is a reasonable goal for installation of high-performing HVAC systems in California? Is a 50% saturation of annual HVAC system replacement by 2011 a reasonable goal? Is 100

percent of replacement of HVAC systems by 2014 a reasonable goal?

Residential New Construction

1. In seeking to obtain “Tier 2 Energy Efficiency levels” (as in the New Solar Home Partnership) or “zero net energy” homes, how should stakeholders evaluate the potential gains from collaboration and coordination among the home building/buying market, government, and utility program participants? How can these benefits be made useful to those designing and delivering programs?
2. What types of evaluative information about program elements might be useful in motivating developers and builders to promote energy efficiency designs and features in new home construction? How should that information be presented to them?”
3. How effective an alternative is it to mandate higher levels of energy efficiency via building standards,with effective enforcement and compliance?
4. Should greenhouse gas reduction be addressed in developing residential new construction strategies? If so, how?
5. Should sustainable development be addressed in developing the residential new construction strategies? If so how?
6. What agencies, associations and individuals need to be involved in a comprehensive approach to improving residential construction standards and compliance?

Industrial Sector

1. What state, regional, and national agencies and individuals could be most influential in promoting voluntary energy efficiency activities in the industrial sector?
2. What policies would promote the integration of energy efficiency measures with distributed generation/cogeneration, and renewable resources in the industrial sector?

3. What type of leadership is needed to set energy efficiency goals for the industrial sector?
4. Are different tactics required for motivating different types of industrial customers to implement energy efficiency? For example, are different strategies required according to the size, the energy intensity, or the technological characteristics of industrial production? Should responses to these strategies be uniform across the state, or vary by utility service area?

C. Strategic Planning Processes and Program Marketing

The following questions address strategic planning and coordination that might occur notwithstanding the major program elements of the utilities' energy efficiency portfolios.

1. Would longer-term, more comprehensive, or wider-geographic scope in energy efficiency strategic planning be likely to significantly improve energy savings or cost-effectiveness? Is more collaborative strategic planning and implementation likely to improve program success and cost-effectiveness?
2. How can utility programs and adoption of energy efficiency codes and standards benefit from the work of other jurisdictions and commercial entities? What would or should be the role of other market players, governmental bodies and individuals in influencing the design and implementation of utility programs?
3. What forums for collaborative planning and implementation should be used to build and sustain long-term relationships among stakeholders and participants in energy efficiency programs? How can these best accommodate discrete initiatives that may involve different stakeholders for each?
4. Should the development of longer-term (7-10 year) energy efficiency strategies be conducted in a different forum from that considering shorter-to-medium term (1-5 year) implementation strategies? For both timeframes, how should

program assessment occur, and how should progress toward milestones be measured, if at all?

5. What are the potential barriers to successful strategic planning? (e.g. institutional, technical, political, legal) What policies or rules should be changed to overcome such barriers?
6. What role should the Commission and other regulatory agencies have in shaping overall energy efficiency strategic plans?
7. How can the knowledge derived from R&D or emerging technology activities be deployed and applied to mainstream energy efficiency programs, and be reflected in codes and standards? What are some good examples of models for this work?
8. How should energy efficiency strategic planning and coordination activities be funded?
9. What should be the role of conservation (that is, customer behavior affecting energy savings) as part of future energy resource strategies?)

D. Marketing, Education and Outreach

The following questions address issues related to marketing, outreach and education for energy efficiency programs.

1. How can the utilities better integrate their energy efficiency marketing, education and outreach activities within utility program areas, such as solar, demand response and metering?
2. How can the utilities better coordinate their marketing, education and outreach activities with other governmental and commercial entities that may have related program or issue areas, such as water conservation, green house gas reductions, or permitting, that could involve communications with utility customers?
3. Are there ways the Commission can motivate the utilities to maximize the effectiveness of marketing, education and outreach activities?

4. What is the role of marketing and education in promoting energy conservation and efficiency, and should such efforts be increased?
5. What kinds of forums would promote comprehensive and coordinated marketing, education and outreach efforts among and between utilities and non-utilities? Who should lead such efforts? How would such a forum differ, if at all, from the work of PRGs and PAGs?

II. Proceeding Schedule

The assigned Commissioner's May 24, 2007 ruling scheduled a possible workshop to discuss adjustment of utility energy savings goals. Because the Commission explored this matter in a workshop in May and has received comments on this issue, this ruling cancels the workshop. The Commission may reschedule this workshop at a later date if it determines that a workshop would be a useful forum for additional consideration of related issues.

The schedule appended to the April 13, 2007 scoping ruling in this proceeding anticipated the responses to the questions herein - and those relating to the advisory framework, such as Program Advisory Groups - would be due July 2. This ruling reschedules the date for responses to questions in this ruling to July 10. Questions on topics related to the advisory framework will be posed in a subsequent ruling, which will also schedule a corresponding deadline for comments.

IT IS RULED that:

1. The utilities shall and other parties may, no later than July 10, 2007, file responses to the questions herein. Each filing shall be served in hard copy on the assigned Administrative Law Judge.

2. The workshop previously scheduled for June 28, 2007 in this proceeding is cancelled.

Dated June 21, 2007, at San Francisco, California.

/s/ KIM MALCOLM by MLC
Kim Malcolm
Administrative Law Judge

ATTACHMENT A
BIG, BOLD ENERGY EFFICIENCY STRATEGIES (BBEES)
WORKSHOP SUMMARIES

I. June 5 and 6, 2007 Workshops on Commercial New Construction

Strategy under discussion: Sign on to achieve AIA/ ASHRAE/ US Green Building Council Campaign to achieve “Zero Net Energy”² New Commercial Buildings by 2030.

Population:

- There is an estimated 120-150 million sq. ft. / year of new commercial construction in California.
- Market segments vary with:
 - type of building (office vs. school vs. hospital, etc),
 - type of owner (large conglomerate with tens of millions of square feet vs. small portfolio owner);
 - owner-occupied (60%+ in Southern California) vs. tenant-occupied; corporate vs. government owners).
 - Others define market segments as those who:
 - want to do the “right thing,”
 - can be persuaded to do the right thing, or
 - must be pushed or required to do the right thing.
- There are several views of how to pursue “leading” action from market segments:
 - Go after the “5% of the (largest) buildings that hold 50% of the total office square footage”?
 - E.g. CB Richard Ellis has a goal of being carbon neutral for its 1.7 **billion** sq. foot portfolio.
 - Develop prescriptive solutions for the 95% of the total commercial square footage in buildings smaller than 50,000 sq. feet; these buildings will need simple, streamlined, prescriptive solutions for energy efficiency
 - Pursue groups of like-facilities (e.g. schools, hospitals, government buildings, and “big box” buildings), as is being done in the Collaborative for High Performance Schools (CHPS).
 - In tenant-occupied buildings, consider identifying companies or organizations that lease large amounts of space, and create a target list of the 20-50 largest “master tenants” who can influence through their specifications what the speculative building market delivers.

State of Art vs. State of Shelf:

² This term refers to a combination of energy efficiency improvements over 2005 building codes, with the remainder of energy coming from on-site renewable sources, such as solar PV or water heating or grid-purchased green energy resources.

- It is fairly well known how to achieve 15-20-30% efficiency improvements better than Title 24, or to get to “LEED Silver”, and to do so at little or no incremental cost. The only issue is how much market demand there will be for this.
- This level of efficiency needs to be constantly incorporated into energy performance standards and code requirements, while new actions can target getting to the 50% and 80% more efficient levels. The LEED Gold standard might benefit from requiring more energy “points” to qualify.
- To get to 50% (“*Getting to 50 [%]*” Summit) or to 80% (AIA, USGBC, ASHRAE Zero Net Energy “2030 Challenge”) better than Title 24 is complex, and not well understood as to **HOW** to achieve this. It will require:
 - considerable modeling of building design and expected energy use,
 - analysis and modeling of “system” solutions, and not “widgets” or “hardware” solutions,
 - well-integrated design/build teams (architects, engineers, construction companies) working together from early stages, and
 - better access to building performance benchmark and end-use commissioning data to support feedback loops between design and performance, and for this to be in the form of useful information (e.g.: “How are we doing compared to peers, or compared to our designers’ expectations?”).
- A recent national investigation of new buildings in the last 5 years could find only 100 buildings that were 50% better than minimum standards. This suggests that the highest-performing buildings are now only “1 in 1000”. The cost of the energy efficiency features was **NOT** a driving cost factor for these buildings.

Design Knowledge:

- There is adequate energy efficiency design knowledge in some parts of the design community (the early adopters), but there are not sufficient knowledge-holders on energy efficient design, design/build integration, or green buildings to apply this knowledge on a wide scale. Those with this knowledge are “maxed” out in current workloads.
- There is a need for more engineers & architects in the field, greater attention to college & university architect and engineer education, as well as mid-career training and certification.
 - There are not enough “seats” in the architecture and energy schools, and many graduates are not staying in the field because compensation is not sufficiently attractive. (Clients will need to spend more on design and analysis to both get better designed and operating buildings and manage the construction costs.)
- Education and professional training need to put more emphasis on knowledge of and approaches to conducting integrated design/construction, especially regarding energy modeling. There also needs to be integration across electrical, mechanical, and structural engineers.
- The greatest knowledge shortfall now is in people trained to perform energy modeling. A long-term commitment to performance based energy standards and to commissioning practices might send a signal to the colleges and universities to add this to their curriculae.

Design Tools:

- A new genre of Building Information Management System (BIMS) tools is fast emerging to help integrate design/cost considerations across architects, engineers, and construction companies.
- However, the energy modeling aspect of this kind of tool still needs improvement. The tools need more perfection, and need to be more “interoperable” in exchange of data or transparency of software.
- There needs to be better coordination on expected and actual energy use across “as designed”, “as built”, and “as operated” stages of a building.
 - There needs to be more post-occupancy commissioning of buildings. To best support helpful diagnostics and feedback, this needs to be at the end-use (not whole-building) level.
- This data needs to be in the public domain, and identifiable by building type, climate zone, and other key distinguishing factors.

State of Technologies Systems Integration:

- In general, there needs to be a better “take it to market” or business model approach to move energy efficiency building technologies and system solutions from R&D and emerging technology (ET) case studies into the market.
 - Preferably this will be done with industry partners, and making a case to manufacturers re: the scale of a potential national market if nationwide leadership can be leveraged.
- Neither US DOE nor California’s Emerging Technology Coordinating Council is fulfilling this “take it to market” role.
 - Utilities feel they can’t justify funding activities that won’t produce savings within 3-year program cycles.
- Selection of target technologies or systems probably needs to pick a short list of most-promising winners, and to focus sufficient attention and resources to get those to market.
 - But, the Northwest Energy Efficiency Alliance asks if there is more “bang for the buck” by focusing on motivating decision-makers, encouraging design integration, and professional education rather than on technologies?

Decision-maker Awareness & Motivation:

- Case studies specific to building type or market segment are important.
 - They must have compelling stories in language and addressing factors relevant to each specific market segment.
- Different benefits drive building owner interest in energy efficient or “green” buildings:
 - to be green,
 - to attract early occupancy,
 - to achieve fast returns on incremental investment, including using federal or state tax credits for energy efficiency buildings,
 - to save on operating costs,

- to have higher productivity or student performance, and/or
- to save on development costs by qualifying for expedited development permits from some local jurisdictions that “fast track” permits for green buildings.
- Decision-makers’ peers are the most influential. In many cases energy is not the first or even second most important reason for green or energy efficiency buildings.
 - Thus the term “high performance” may be far more attractive to building owners.
- Commercial new construction is a “relationships” market, with developers, designers, and construction firms frequently teaming together for project after project.
- Some kind of universal benchmarking or rating system could help drive demand for energy efficient/green/high-performance buildings from owners, decision-makers, and master tenants.

Who Needs to be Involved in Defining Building Energy Efficient strategies?

- Key stakeholders should include:
 - Professional organizations (AIA, ASHRAE, USGBC) and their leading professional members
 - Major building owners, Green REITs, and master tenant decision-makers and the organizations to which they belong: Urban Land Institute, Building Owners & Managers Association
 - Manufacturers of building systems and components (e.g. lighting, air conditioning, controls, glazing, etc.)
 - Governmental or non-profit organizations from leading states, regions, or cities (e.g. Calif., NY, Northwest, Portland, Seattle, San Francisco, Santa Monica, ...) and the utilities/administrators conducting energy efficient programs in these regions
 - Specialized energy & environmental advocates (e.g., NRDC , CEE)
 - Building researchers
 - Software developers and energy modelers
- There may be “no right convening organization now to tackle these sets of questions. The building community does not have the social infrastructure to do this.”

II. June 5 and 6, 2007 Workshops on Residential and Small Commercial Heating Ventilation and Air Conditioning (HVAC)

Strategy under discussion: Achieve some identified level of market penetration of high-efficiency HVAC systems in the retrofit/replacement residential and small commercial market segments. Systems also should be optimally sized, with high-quality installations, and low-leakage, properly sized ductwork. This strategy might involve a national approach to climate-zone-efficiency standards.

Identified Goals:

- The HVAC workshop held on June 5-6, 2007 identified its Big/Bold workshop goal as aiming to meet the CPUC/CEC/Itron estimated potential energy efficiency reduction of 2 TWh, 1400 MW and 300 MMth over 10 years, or through 2016.

The Problem:

- Residential and small commercial air conditioning is a major contributor to peak electrical demand in California and it is growing faster than overall demand for electrical energy. The primary causes of this are:
 - new developments being located in more extreme climates than the majority of existing housing and small commercial establishments,
 - increased size of houses, and
 - remodeling in older, less extreme climates where air conditioning is being added during the remodel.

Issues:

- Equipment not Optimized for Western Climates
 - National standards for air conditioners do not meet California's hot/dry climate needs, a problem also experienced in most of the western states.
 - The current standard is 13 SEER, using a national climate rating of 82° F for mild and humid summers, not the hotter and dryer conditions typical of western summers. New A/C equipment uses a different refrigerant (R-410A instead of R-22) which unfortunately exhibits poor performance at high temperatures.
 - "Onboard" alarms and diagnostics³ built into some HVAC equipment can be helpful in ensuring that HVAC equipment operates properly over its lifetime. At the present time, these tools seem relatively expensive and are not widely installed.
- Installation Quality

³ This would include sensors on the equipment that could relay status information to the consumer, utility, or other party about the equipment and its operating system, such as a red light indicating a the system is not performing at its optimum and that some intervention may be warranted.

- Leaky, undersized, and poorly insulated ducts waste 30%+ of the energy and about 40% of the power consumed by air conditioners on hot days. About half of these losses can be saved by sealing the air leaks.
 - As an example, ducts with leaky returns can pull in 160° F attic air (versus ambient temperatures for indoor or shaded outdoor zones), which has a significant and detrimental impact of the efficiency and capacity of the cooling equipment. Often the best solution for a poor duct system is to replace it altogether.
- Proper refrigerant charge and air flow tune-ups would save much of the rest of these losses.
 - California studies have shown approximately 75% of all HVAC systems have incorrect refrigerant charge. In addition, the EPA found that 70% of the homes they tested had incorrect air flow. These problems cause the air conditioner to run longer and use more energy than required.
- The California Energy Commission currently has requirements in place for contractors to fix the ducts and properly charge the refrigerant. The problem is that less than 10% of the time do contractors obtain local building permits and as a result these energy requirements are never enforced.
- Proper sizing of HVAC systems is essential to achieving the maximum efficiencies of the product.
 - Oversized air conditioners cycle on and off, wasting energy and exacerbating restrictive duct problems.
- There was consensus among the participants that these problems were real and needed to be addressed.

The Opportunities:

- Several key ideas came out of the workshop. While there was general agreement on these ideas, there was much more variability on the best way to implement them.
- Newer Technologies are Available to Help Meet the Energy Savings Goal
 - There are emerging technologies that provide high per unit savings at low per unit cost.
 - These include hot/dry climate-optimized air conditioners, ductless split systems, and advanced high-reliability roof top units.
 - Most of these technologies will fit both residential and small commercial applications.
 - Duct testing, controls and diagnostic technologies provide additional tools needed to help meet compliance standards and ensure proper performance that persists.
 - These tools are available today, but are not widely used.

Barriers to New Technologies and Proper Installation:

- Barriers include
 - first cost (because most contractors don't get permits or replace ductwork, their work is less expensive than contractors who do. Few homeowners discriminate between contractors other than on price.),

- unfamiliarity with the technology and a lack of experience with it,
- lack of water on site for evaporative cooling technology,
- lack of trained maintenance and service personnel.
- incomplete connection between RD&D, emerging technology, full program participation and standards needs to be developed.
 - In addition to getting installations of traditional HVAC systems to work properly, there needs to be a path for new technologies to enter the marketplace so that this process is more predictable and effective.
 - Education and training of contractors and technicians on installation quality and system performance will be just as important, if not more so, as these innovations are brought into the marketplace.
- Education and Training
 - There needs to be a concerted long-term effort to educate consumers on what to ask for and a similar effort to teach contractors how to ensure that replacement HVAC systems are installed and working properly. This includes ducts, air flow, refrigerant charge, sizing and equipment efficiency. This education and training needs to be consistent throughout the state.
 - Regular contractor training coupled with certification is necessary but not sufficient. The training needs to be linked with verification of performance and recognition of high quality work in the marketplace. Participants recognized that training of the next generation of skilled HVAC technicians is needed.
- Consequences for Illegal Practices and Poor Installations
 - As of 2005, Title 24 has required that duct leakage be reduced and refrigerant charge be corrected when a replacement air conditioner is installed. Unfortunately, the value of meeting this legal requirement has not reached the typical consumer and most contractors are not making it clear that it is essential to ensure a properly performing system.
 - Several suggestions addressed the idea that manufacturers and distributors need to work with the utilities, local building inspectors, the Energy Commission and the Contractors State License Board (CSLB) to create a more effective system to ensure compliance with the law, and by doing so, to create a more level playing field for contractors. (Neither the CSLB or local building officials were present for this workshop.) It appears many building departments may not have adequate resources to inspect all jobs if permits were widely utilized. It is possible other professionals, such as HERS raters, could assist.

Measurement and Verification is Essential:

- At the present time, individual system performance varies substantially from house to house.
 - Quality improvement principles are needed and must be broadly accepted to ensure that each system is working properly upon completion of the installation.
 - This verification step can help contractors understand the interaction of system components and increase their ability to get the system working properly in less time.

Quality Work, Recognition, and Marketing Support:

- One of the big issues was how to differentiate contractors who were doing a good job and following the law from those who were not.
 - Participating in training and verifying installations should lead to better performing systems, more satisfied customers and reduced energy use.
 - Quality and standards compliance needs to be valued in the marketplace. One idea was to provide contractor-specific feedback on installation quality, energy performance and customer satisfaction so that consumers can differentiate among contractors.
 - This could become the cornerstone for a rating system that could become available on utility websites, the CSLB or other publicly accessible locations.
 - Utility-funded programs should require quality installations in addition to high efficiency equipment. This could maximize gains from change outs and to help create a market for high quality work.

Revisit Technical Databases:

- The participants felt very strongly that the data assumptions and metrics for energy efficiency programs (e.g. DEER, E3 calculator, RASS, CEUS) were not supportive of high quality installations or innovative, emerging technologies.
 - The participants recommended that these database assumptions and metrics need to be addressed immediately for use in the 2009-2011 planning cycle. For instance, the DEER database uses average energy savings for equipment change-outs and ignores installation quality issues. This can understate the energy savings found with better technologies and quality installations. Ex ante program impact assumptions and ex post program evaluations must be able to capture the missing savings when programs target quality installations. Similarly, it is important that load shapes and avoided costs used in E3 cost-effectiveness calculations reflect time-of-day profiles. More attention should be given to the menus of load shapes, avoided costs, and measure/installation combinations applicable to well-designed and installed energy efficient actions.

Partnership for High Quality HVAC:

- The participants agreed that a common statewide (and most probably regional) approach is needed. This would include:
 - consumer education,
 - contractor training,
 - installation verification,
 - imposing consequences for not complying with state statutes, and
 - market recognition for quality work.
- Both commissions, the utilities, contractors, local governments and other stakeholders need to be active partners in developing action strategies to ensure HVAC installations achieve the large potential energy savings.
- Participants recommended creating a common brand for quality A/C installation services.

III. June 7 and 8, 2007 Workshops on Residential New Construction

Strategy under discussion:

- Short-term: 50% of all new residential construction in 2011 will achieve the “Tier II” requirements of the Energy Commission’s New Solar Homes Partnership⁴;
- Long-term: 100% of all new residential construction in 2020 will achieve “zero net energy” consumption.⁵

Priorities for Accomplishing Goals:

- All parties agreed that the top priorities needed to accomplish these goals are:
 - strong collaboration among stakeholders;
 - readily available information and performance feedback; and
 - revision of the timing and allocation of utility incentives.

Collaborative Approach:

- To achieve these goals, it was agreed that a collaborative group should be formed among five major stakeholders to design and commit to a plan of action:
 - Regulatory agencies (CPUC and CEC)
 - Local governments
 - Builders
 - Developers
 - Utilities (investor-owned and publicly-owned).
- The success of this collaboration should be measured by
 - the extent of increased education and meaningful feedback to home buyers and developers, as well as recommendations for utilities to refine their incentive programs;
 - targeting energy efficiency decisions that occur earlier in the development process; and
 - improved design of incentive levels and marketing campaigns to help builders better offset the additional costs of high efficiency design features, compared to the price of standard homes.

⁴ New Solar Homes Partnership Tier II Energy Efficiency Requirements:

- 35% Total Energy Savings Compared to 2005 Title 24
- 40% Cooling Energy Savings Compared to 2005 Title 24
- Energy Star for Builder Provided Appliances
- Full Compliance with Title 24 Lighting Requirements

⁵ Zero net energy is achieved through a combination of conservation, energy efficiency and the use of renewable energy to balance out energy consumption.

Access to Information and Feedback

- There was agreement that a web-based, user-friendly repository is necessary that can provide relevant information to developers, builders, real estate agents, and purchasers about high efficiency building performance and values.
- The group discussed the value of access to information and feedback such as
 - region-specific incentives,
 - quality comparisons amongst builders,
 - locations of above-code housing developments,
 - resale market indicators of success with high efficiency features,
 - design features incorporated, and
 - lessons learned.

Feedback Loops:

- Many felt that feedback loops such as listing property values of high efficiency homes could help create market demand and improve market penetration.
 - The group concluded that development of this education/feedback tool would best be prompted by attention from the stakeholder group identified above (regulatory agencies, local governments, builders, and developers).

Achievement of Long-term Goal:

- Workshop participants strongly supported the short-term goal, but also believed that the longer-term goal should be pursued.
- Achieving the long term goal is likely to be driven in part by market demand.
- Accomplishment of the longer-term goal would require focus on production builders and developers of master-planned communities that current utility programs do not effectively target.
 - Developer representatives at the workshop estimated that 70%-80% of new homes in Southern California are in master-planned community developments of up to eight thousand homes per community.
 - To more thoroughly understand the steps in the decision making process for such developments, the group participated in developing a timeline of major stages of master planned development and the actions and intervention opportunities that exist in each of those stages that may impact the ultimate energy use of the homes.
 - Better appreciation of these steps could help to shape the revision of utility incentives, and could be refined within the stakeholder group.
 - The recent action by the California Attorney General to obligate consideration of greenhouse gas emissions in the Environmental Impact Reports for master planned communities is an example of potentially very powerful drivers for improvement of energy efficiency at play in the development process.
- The headings in the following table indicate a length of time prior to home occupancy during which the actions listed take place.

Zoning (10-15 years)	Secondary Entitlements (5-6 years)	Designing (3-4 years)	Preliminary Building (1-2 years)	Final Designs (1 year)
Jurisdiction long range plan EIR (density + some req's) New requirements for GHG Development Agreements Local outreach Traffic studies A-Map Local Agency approval	Growth Trends Regulations Discussion w/ utilities re: "Will Serve" agreements Sub-division-Map Street layout Orientation	Market trends Costs / Pricing Preliminary Designing Utility planning Major infrastructure Utility backbones Product array Sizes & Type Plant palette Overall water use	Underground Streets Line extensions (within subdiv.)	Pulling permits Building Selling

- There was agreement in the group that the current utility new construction programs are designed to intervene during the Preliminary Building and Final Design stages.
- There was strong agreement that the 3 year program cycle and associated portfolio rules constrain the current utility new construction programs to address only these end-of-the-development process intervention opportunities.

Additional Issues:

- Several other issues and opportunities that should get greater policy attention from the CPUC and/or the CEC were discussed, including:
 - the need to pursue actions to achieve 100% compliance with Title 24, and to establish an effective baseline for going beyond code;
 - the need to address additional savings opportunities beyond those currently captured by Title 24 or Title 20 standards, such as additional lighting savings and reductions in plug loads;
 - savings targeted by "green" or sustainable community design that go beyond building energy savings such as walkable communities, carbon neutral developments, and transportation related options.
- Much of this discussion sprang from the certainty that energy efficiency of all types would be necessary to achieve greenhouse gas reduction goals in an AB 32 world.

Feasibility:

- Overall, there was strong agreement that the goal to achieve the New Solar Homes Partnership Tier II energy efficiency requirements is clearly feasible.
- What is big and bold about the short-term goal is the rapid change in market penetration that would occur.
 - California participants in the Building America program have demonstrated the achievability of the NSHP Tier II requirements, and SMUD has had good experience with accomplishment of similar levels with their Advantage Home brand.
 - There also was strong support for achieving the 100% compliance with Title 24 baseline, and to include affordable housing in pursuing the goals.

- The group recognized that technology improvements would be necessary to achieve a cost-effective zero net energy home, but that achieving market penetration success for the NSHP Tier II requirements would stimulate demand for such technology innovation on a large scale.

IV. June 11 and 12, 2007 Workshops on Industrial Sectors

Strategy under discussion: Industrial sector achieves 100% of electricity economic potential (e.g., 15%) by 2015, through voluntary action.

Issues Common to All Industrial Sectors:

- While the industrial sector is very diverse and fragmented (by subsector), some issues are common and relevant for all industrial subsectors.
- Some industries perceive that the “low-hanging fruit” - energy-efficiency measures with short payback periods - has been picked, and many barriers (technological, financial, policy) prevent industry from investing in measures and systems that provide greater energy savings.

Technological barriers include:

- the shortage of demonstrations information about new technologies,
- capital-intensive emerging technologies,
- complicated process controls/optimization,
- production/reliability concerns with new technology or processes,
- the lack of benchmarking, and
- lack of methods for industries to better understand and control their energy usage.

Financial Barriers Of Utmost Importance

- Staff heard that capital allocation issues are a significant economic challenge/barrier to some industries in the implementation of energy efficiency.
- Industries grapple with:
 - the high cost of some plant improvements and technologies,
 - price caps on incentives from the utilities,
 - variation in required rates of return (or payback period) among different industries (ranging from 6 months to 5 years),
 - long lead times to capture savings,
 - energy market-risk/reliability issues and
 - price volatility.
- Some industries are seasonal, so it does not make economic sense for them to spend money for improvements that are used only a few months out of the year.
- Some companies are concerned that their plants might not be around in a few years.
- The perceived cost of failure is high.

Additional financial issues:

- The long utility incentive application and fund approval process, and the uncertain timing of funds availability.
- Some industries are primarily concerned about their utility rates, and do not focus on usage (unless there is real-time pricing).
- There is often a “disconnect” within companies between personnel who pay power bills and those that buy energy-using equipment.
- Companies do not like the potential disruptions to their production cycle.
 - One company cited the long-term cycles of equipment – they have not had to shut down since the late 1970s (~30 years!).

Policy Barriers:

- Various policy and regulatory issues may preclude industries from taking on energy efficiency such as:
 - Uncertainty related to how AB 32 will unfold, and what kinds of attribution of credits will be available to industries.
 - When companies wish to implement energy efficiency at a facility, there can be regulatory and environmental requirements that preclude them from making the energy improvements.
 - The 3-year utility program cycle does not mesh well with long equipment turnover cycles and long project planning cycles of the companies.
 - There is a lack of staff available to take on energy efficiency projects (especially for smaller size industries).
 - Some companies have looked into implementing Combined Heat and Power, but environmental regulations/permitting is a hurdle, or they have found that the utility’s exit fees are extremely high.
 - There is a lack of statewide consistency in energy efficiency programs (i.e., variations in incentive levels and program design).

Achievements:

- Despite these barriers, there have been significant success stories in industry (e.g., cement, petrochemicals, electronics, and beverage).
- Industrial customers have invested in energy efficiency (new technologies as well as commissioning) for mainly financial reasons.
 - Non-energy benefits (enhanced productivity, reduced maintenance) have played a significant role in affecting investment decisions (carbon credits may also be important in the future).
 - Upper management (CEOs) has played a critical role in influencing personnel to invest in energy efficiency; without CEO support, it would be more difficult for these companies to invest the large amount of money that is needed for retrofitting or new construction.

Big Bold Strategies:

- The group suggested various Big Bold Strategies to motivate industries to implement energy efficiency in the industrial sector. These include:
 - Integrate DG/energy efficiency/RE and gas/electricity in programs and offerings to customers.
 - Remove barriers to CHP and biogas with food processors, including the reduction of permit requirements/redundancies.
 - Work with USDOE and USEPA (Energy Star in particular) to leverage efforts in California.
 - Work with industry CEOs (and/or other top industry personnel) and subsector trade associations to set goals by sector and provide public recognition as a carrot. Also, the State should help provide resources to meet the goals.
 - Invest in training and education of energy personnel such as through UC/CSU or trade schools.
 - There is a need for the State to say that the market will be there for these graduates.
 - The State should invest both in personnel training (at the companies) and student training (in schools – e.g., the U.S. DOE Industry Assessment Center (IAC) model at universities works well).
 - Eliminate the timing uncertainty – match utility program cycles with industry capital investment timeframes.
 - The CPUC should lengthen the utility’s energy efficiency program cycle to longer than 3 years.
 - Simplify the process of bringing new technologies into utilities’ programs.
 - Provide more funding to do more technology demonstration projects.
 - Provide implementation support to smaller companies and non-participants.
 - The State should quickly flesh out AB32 action strategies to get more energy efficiency.
 - The State, through the CEC’s IEPR process, CPUC, and ARB, should highlight industry as part of a statewide effort to achieve energy efficiency – via goals, awards, recognition, incentives, etc.

V. June 13, 2007 Workshop on “How to Sustain Planning & Coordination for Long-Term Energy Efficiency Strategies”

This workshop addressed two subjects:

- How to ensure effective strategic energy efficiency planning and implementation (“strategic planning”) across stakeholders, including the transfer of R&D and emerging technologies findings into energy efficiency programs, codes, & standards; and
- How to assure effective coordination and integration of education, outreach, and marketing activities among energy efficiency programs and across related demand-side activities for low income, solar, and demand response goals.

Strategic Planning:

- The strategic planning discussion occurred through three panels:
 - Utilities (including one publicly-owned utility [SMUD]) alongside PG&E, SCE, and Sempra),
 - Other California stakeholders (including DRA, Flex Your Power, NRDC, TURN, and the UC Davis energy efficiency Center), and
 - An out-of-state panel participating by conference phone (Northeast energy efficiency Partnerships, National Grid (a utility), Northwest energy efficiency Alliance, and the Energy Trust of Oregon).
- **SMUD** emphasized two themes:
 - the need for quarterly or semi-annual meetings of those working on emerging technologies, and
 - the need for more connection between energy efficiency technology researchers and a “path to market” that includes collaboration and coordination with those who carry out programs and sell technologies and services in a market setting.
- The **three California IOUs** presented a joint vision for coordination that involved several elements:
 - A formalized process of continual improvement in energy efficiency programs. This would occur by organizing an annual workshop in a “set format” (agenda with scheduled topics, times and speakers), taking an 18-month look –ahead.
 - There would be 2 “tracks” -- residential and non-residential. For each track, there would be 3 workshop topics:
 - EM+V,
 - technology, and
 - discussion of how well the energy efficiency “program itself” is doing, what implementers have done, and are finding.
 - Non-IOU utilities would be invited to attend voluntarily (perhaps under the encouragement of the CEC’s energy efficiency target setting role for publicly owned

utilities), and the reach would extend to the wider western region of interested states and stakeholders, including researchers and environmental organizations.

- **DRA** presented its vision of elements, tools, and an organizing framework for sustaining Big Bold Strategic Energy Efficiency Planning.
 - Elements:
 - Research to understand trends, marketplace & customers before designing programs
 - Holistic program design that takes an integrated, comprehensive approach, and not one of single energy efficiency measures
 - Integrated energy programs that appear seamless to the customer—including collaboration across service territories and “silo” proceedings (e.g. solar, demand response, distributed generation)
 - Tools:
 - Collaboration across IOUs, munis, market stakeholders
 - Statewide programs
 - Role for local governments to capture their unique advantages in strategies for (e.g.) ordinances, local permitting, and compliance
 - Re-thinking incentives to go beyond the financial, including promoting cultural shifts to energy efficiency
 - Making (utility energy efficiency) funding cycles longer or eliminating them altogether
 - Organizing Framework(s):
 - Short term: extension of Big Bold workshop process to PAGs and using the “PAGette” model for stakeholder engagement in more specific issues and action plans
 - Long term: CPUC should continue to coordinate a strategic roadmap with milestones and action plans, and perhaps call upon some formalized statewide entity for support (e.g. an existing state agency or some new entity)
- **NRDC** emphasized the importance of including university energy efficiency centers, such as those at UC Davis and Stanford, into the thinking and strategy development process, and ensuring a deliberate inclusion of standards as one element in overall energy efficiency strategies.
- A representative from the **California League of Women Voters** emphasized that planning must be a “process” and not a one-time event or meeting.
- **Other California speakers** underscored the importance of doing planning and coordination.
 - **One** speaker commented that to ensure broad interest across stakeholders, including publicly-owned utilities, any strategic forum should be led by the state, but not as part of a CPUC docket. This forum also should include ARB, CEC, DWR, Dept. of Transportation, Housing, Cal EPA, etc. and should deal with policy and long term strategies, as an advisory body to decision-makers.
- **Out-of-State Panelists’ Themes:**
 - Establish multi-year strategies and program plans, with advance commitment of funds, specification of end goals and interim milestones, and mechanisms to track, quantify, and assess interim progress toward goal(s)

- Planning and implementation requires collaboration across a wide range of affected stakeholders. You need a forum that continues over time to permit establishment of trust among participants and to find common ground for aligning interests and abilities with multi-year energy efficiency strategies.
- There can be separate multi-year regional strategies, and each one may have a different mix of stakeholders.
- Meetings and communication can occur as often as 6 times a year, sometimes in person, and other times via web cast or telephone conferences
- Overall policy direction may be discussed and reviewed by advisory boards, sponsor groups, etc. on an annual basis, at which time funding commitments can be adjusted.
- The greatest success comes from a clear focus on the “market” – understanding trends and the roles of business, end users, utilities, and others, and ways to structure effective partnerships.
- Part of tracking progress includes continuous evaluation and monitoring, with regular meetings between evaluators and implementers to learn what is working or not, and how to adjust implementation for most effective results (e.g. “real time” feedback can occur with about a 6-month lag).

Coordinated Education, Outreach and Marketing:

- General Comments
 - Good marketing, education and outreach are essential for program success.
 - The utilities study what kinds of messages are most effective and tailor them to sub-populations.
 - The Commission shouldn't micromanage marketing and outreach programs.
 - Consider marketing strategies that encompass all three energy efficiency strategies:
 - resource acquisition
 - market transformation
 - conservation/behavioral
- Non-utility coordination
 - Flex Your Power serves as a partial clearing house for information related to non-utility programs. Some outreach and marketing efforts have been coordinated successfully with other indirectly-related programs, but it is a lot of work.
 - We need to leverage opportunities presented by programs directed by other state and local agencies, efforts promoting “Smart Growth” and integrative planning, greenhouse gas marketing and education efforts.
 - Energy efficiency programs could benefit from more leadership from high state officials in very concrete ways; energy efficiency should be connected to other state functions, such as licensing and permitting.
- Utility program “silos”
 - Energy efficiency outreach and marketing should be coordinated with Low Income energy efficiency, solar, demand response marketing and outreach efforts.

(END OF ATTACHMENT A)

INFORMATION REGARDING SERVICE

I have provided notification of filing to the electronic mail addresses on the attached service list.

Upon confirmation of this document's acceptance for filing, I will cause a Notice of Availability of the filed document to be served upon the service list to this proceeding by U.S. mail. The service list I will use to serve the Notice of Availability of the filed document is current as of today's date.

Dated June 21, 2007, at San Francisco, California.

/s/ ELIZABETH LEWIS

Elizabeth Lewis