



Progress Report 8 – Pilot State Policy Recommendations

TASK ORDER **KAAX-3-33412-13**

Deliverable Number 13.A.8

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DATE: NOVEMBER 20, 2006

“BUILDING INDUSTRY RESEARCH ALLIANCE (BIRA) ZERO-ENERGY HOME PROJECTS”

Executive Summary

Working under the US DOE Building America Program, the Building Industry Research Alliance (BIRA) has constructed close to 40 ZEH communities in CA with over 1500 units. ZEH homes are designed to produce a 50% to 60% reduction in the predicted energy bill. There is no other group that has been more directly involved in the design and integration of energy efficiencies and solar for ZEH in the residential new construction field with production builders nationally. Due to the continued rapid population growth in the Southwest and the need for significantly more new housing, ZEH communities in this region offer one of the greatest market transformation opportunities in many years for residential energy efficiency with integrated solar energy systems. However, barriers and obstacles to large scale ZEH construction still exist in the Southwestern states of New Mexico, Arizona and Nevada. This report exams the current state codes as well as the infrastructure that exists through residential new construction program components, solar incentives, tax credits and net metering rules. Action steps are then synthesized into recommendations for state, utility and local government policy and barrier removal.

Policies and Related Factors Effecting ZEH Advancement in our Three Pilot States

The ZEH-related energy policies in place in our three pilot states are as varied as the states themselves. There is no standard when it comes to ZEH policy formulation. It is true that there are a core group of policies that are desirable and can help speed the introduction of ZEHs. Policies include fair net metering rules, easy-to-use interconnection agreements between utilities and home owners, solar and energy efficiency rebates for new construction offered by utilities, state solar and energy efficiency tax incentives to complement federal tax incentives, and local government recognition programs and permit streamlining for ZEH homes.

The governors of each of the pilot states support new jobs and environmental benefits created through new policies related to green building, energy efficiency and renewable energy technologies. They recognize the huge economic windfalls possible through investments in solar technologies in the coming decade, so that bodes well for our ZEH work in each pilot state. We have champions available at the highest levels of state government.

Here is a look at some of the unique factors in each state, including policies, personnel, programs and existing political priorities that relate directly to ZEH markets and our pilot project.

New Mexico

Unique ZEH-related Policies and Initiatives in New Mexico

Mesa Del Sol has planned 37,000 homes over the next 20 years for southern Albuquerque. Mesa Del Sol has the strong support of state and local political officials and the Public Service Company of New Mexico. Nowhere else in the southwest is there a better opportunity to build a large-scale ZEH community.

Governor Richardson's Climate Change Advisory Group

In 2006, Bill Richardson, New Mexico Governor and former U.S. Department of Energy Secretary under President Bill Clinton, established a Climate Change Advisory Group (CCAG), which is quite active in New Mexico. The CCAG, composed of industry, utility, university leaders and other energy-related stakeholders, recently finalized a comprehensive package of policies that will create new energy technologies and dramatically reduce global warming emissions. New Mexico is one of the first states to develop a detailed roadmap that has near unanimous support from all sectors in the state. The CCAG passed unanimously 64 policies that could reduce emissions in New Mexico by 10% below 2000 levels by 2020. This group will be instrumental in the future of ZEH construction.

Albuquerque Interest and Leadership on green building and ZEHs

There is no substitute for high-level political leadership on ZEHs. Without this leadership, ZEH-related policies often languish or disappear due to lack of political will. The Albuquerque Mayor's office is especially interested in green building and above-code construction, and ZEHs, and will be vital for the success of ZEHs. The city has a green building consultant from British Columbia under contract, and ZEHs should complement the suite of programs advocated by this consultant.

No Energy Star Program in Place/Limited Utility Presence in the New Residential Construction Area

The Public Service Company of New Mexico is perhaps the weakest utility in the three pilot states when it comes to past support for the *Energy Star* New Homes program and/or new residential construction energy efficiency programs in general. This is changing, and PNM officials are filing a request for an *Energy Star* new homes program with state regulators late this year. The BIRA team has advocated with PNM officials for an *Energy Star* new homes program, and also a second more aggressive ZEH-related program that rewards above-code solar and energy-efficient construction. At a minimum, our advocacy efforts have helped solidify the new *Energy Star* program offering, since PNM officials support ZEHs but say that they are reluctant to, "...do too much at once in the beginning."

New Mexico's Residential Energy Code

New Mexico's residential energy code is the 2003 IECC and it is mandatory statewide. New Mexico reviews their residential energy code at least every three years. The most

recent energy code update was effective July 1, 2004.

The New Mexico General Construction Industries Advisory Subcommittee has requested the Construction Industries Commission to review the 2006 IECC, which is the first of the many steps in the state's code adoption process. Reviewing the code and receiving comments from advisory groups, presenting the issue at public hearings, digesting all comments and presenting suggested changes, and submitting the final recommendation to the Commission, the code is either accepted or declined. If accepted it will be implemented in the state rules, and effective after 30 days notice. Anticipated effective date is January of 2007.

Existing New Residential Construction Programs

While thousands of *Energy Star* new homes have been built in New Mexico in recent years, again PNM currently does not offer any *Energy Star* related incentive programs to builders, however, as reported earlier they are considering adding some type of an *Energy Star* home program in a filing to the state regulatory body by the end of calendar year 2006.

Existing Solar Incentives

New Mexico offers a personal tax credit of 30% for photovoltaics and solar hot water systems—but only supplementary to and not duplicative of federal tax credits. New Mexico's SB269 explicitly stated that the state tax credit cannot be combined to exceed 30% of the total solar system cost. Therefore, the New Mexico state tax credit comes in where the federal tax credit stops at \$2000/residential system, and it goes beyond 1/1/2008. Therefore, when the federal solar tax credit expires the state credit will kick in for the full 30%.

New Mexico offers an attractive production incentive also. The Public Service Company of New Mexico (PNM) has a program to buy solar renewable energy credits for \$0.13/kWh through 2018.

Existing Net Metering

Net metering is provided in New Mexico for systems up to 10kW. Net metering for the state investor-owned utilities went into effect in 1998. (The law was amended in 1999.) The "extra" net metering balance is credited to the customer's last bill or purchased by utility at avoided cost rate.

Arizona

Unique ZEH-related Factors in Arizona

There are a number of unique Arizona attributes related to ZEH construction.

Energy Star Momentum

Arizona is unique due to its very large foundation and support for *Energy Star* homes provided by Arizona production builders. Federal *Energy Star* program officials succeeded in building a strong foundation in Arizona. In 2004, more than 11,000 homes of the 81,000 homes built in Arizona were *Energy Star* homes, which is 14% of all 2004 new homes built. This compares to an average *Energy Star* home penetration rate of 8% nationally. In 2004, 8.6% of all *Energy Star* homes in the nation were built in Arizona. This interest in above-code construction by Arizona home builders is an important factor in our quest to build more ZEH communities there. When it comes to convincing home builders to build more efficiently to ZEH requirements (50-60 percent above code), *Energy Star* builders tend to be more likely to consider ZEH construction.

New Renewable Energy Standards/15 % by 2025

New Renewable Energy Standards recently replaced Arizona's Environmental Portfolio Standard. After three years of research, the Arizona Corporation Commission (ACC) in November 2006 set a policy requiring the state's regulated utilities to provide 15-percent of their total energy supply by 2025 using renewable energy technologies. The policy still has to be approved through the Attorney General's office. With no large rivers or geothermal energy resources, this new mandate relies heavily on solar energy, especially photovoltaics, to meet the goal. Significantly, the Commissioners also required a growing percentage of the total resource portfolio to come from distributed generation – residential or non-utility owned installations. The distributed energy requirement starts at 5-percent of the total portfolio in 2007 and grows to 30-percent of the total renewable mix after 2011.

No Statewide Net Metering Rule in Effect

Unlike Nevada and New Mexico, the state of Arizona has no statewide net metering rule in effect. The Phoenix-area Salt River Project utility and Tucson Electric Power both have net metering rules that apply to photovoltaics up to 10 kW. However, Arizona's largest investor owned utility, Arizona Public Service Company, does not have a net metering program at this time. Tucson Electric Power's net metering rule also applies to wind. This unique situation offers an opportunity to level the playing field in Arizona.

Plentiful Utility-Managed New Residential Construction Programs

All major Arizona utilities have a new residential construction program in their portfolio, which bodes well for ZEH construction. Each utility considers their program an important part of their suite of programs as well.

Strong Solar Infrastructure in Place

Arizona has possibly the strongest solar infrastructure in place of the three pilot states. The state is the home to solar manufacturer Kyocera Solar, Inc. and others, and it has an active Solar Energy Industries Association. Solar champions, such as ex-Department of Energy employee, Bud Annan, from the Annan Group, are readily available and active on the political and technical fronts. A steady flow of competent energy office directors over the last two decades who attracted solar funding to Arizona have helped build a vibrant, entrenched solar community. Congressional leadership in the solar area helped bring solar industries to the state over the past decade, so Arizona has the potential to ramp-up the ZEHs program faster than any of the three pilot states. This active infrastructure is a huge bonus for ZEHs.

Arizona's Residential Energy Code

Arizona's residential energy code is the 2000 International Energy Conservation Code (IECC), and it is voluntary. Unlike California and New Mexico who have regularly scheduled code updates every three years, Arizona has no scheduled updates. As a home rule state, Arizona updates their energy code through state legislation.

Existing New Residential Construction Programs

Arizona Public Service Company offers a *Performance Built Homes Program*. Builders offer homebuyers guaranteed heating and cooling costs through the program. The **Salt River Project** offers the *Power Wise Homes Program* which requires that homes meet or exceed a HERS rating of 87, and they have to include high efficiency cooling and heating equipment. **Tucson Electric Power** offers the *Guarantee Home Program*, which guarantees heating and cooling costs and comfort for three years. If the annual energy costs exceed the specified cost, TEP will refund the difference to the homeowner. Finally, the **Southwest Gas Company** offers a *Southwest Gas Energy Advantage Plus (EAP) Program* for new home construction program. All EAP homes must be 15-percent more energy-efficient than the existing IECC code.

Existing Solar Incentives:

Each utility administers its own solar incentive program, and state regulators recently announced new Renewable Energy Standards which requires utilities to meet 15-percent of their total energy with renewable resources by 2025. The new standards (for the regulated utilities, APS and TEP) will replace the old Environmental Portfolio Standard which provided these solar incentives to each utility:

- a. APS: had a rebate of \$3.00/W, capped at 50%
(http://www.aps.com/my_community/Solar/Solar_49.html)
- b. TEP: had a rebate of \$2.00-2.70/W (depending on whether one purchases from TEP or not) (<http://www.greenwatts.com/pages/sunshare.html>)
- c. SRP: had a rebate of \$3.00/W, \$750 for solar hot water heaters
(<http://www.srpnet.com/environment/earthwise/solar.aspx>)

Existing Net Metering:

As of this moment, there is no statewide net metering standard in Arizona. A working group has been established by the Arizona Corporation Commission, and this group has been tasked with developing recommendations. Individual utilities have set their own standards as follows:

- a. Arizona Public Service (APS): Does not offer net metering. Offers net billing, in which excess power is purchased at the wholesale rate.
- b. Tucson Electric Power (TEP): Offers net metering for system sizes up to 10 kW, with total metered capacity capped at 500 kW aggregate.
- c. Salt River Project (SRP): Offers net metering to 10 kW, with no cap. SRP has a Residential Solar Buyback Credit, which is equal to the number of excess kilowatt-hours (kWh) for a bill cycle multiplied by the *average monthly market price minus \$0.00017/kwh*. The price adjustment of \$0.00017/kWh represents the cost incurred by SRP for scheduling, system control and dispatch services.

Nevada

Unique ZEH-related Factors in Nevada

There are a number of unique Nevada attributes related to ZEH construction.

Renewable Energy and Energy Conservation Task Force

In 2001, Governor Kenny Guinn announced the formation of a Renewable Energy and Energy Conservation Task Force that was required by AB 661 which was passed by the 2001 Legislature. The task force administers the newly created Trust Fund for Renewable Energy and Energy Conservation, which provides funding for renewable energy, energy conservation and energy efficiency programs. It also advises the Nevada State Office of Energy on renewable energy and energy conservation aspects of the comprehensive state energy plan.

The Task Force also coordinates activities and programs with the Attorney General's Bureau of Consumer Protection, the Public Utilities Commission of Nevada and other federal, state and local offices and agencies involved in renewable energy, energy conservation and energy efficiency. Additional Task Force mandates include public education and outreach, the creation of program incentives, the distribution of grants, and the development of studies related to the use of renewable energy and energy conservation and energy efficiency.

Statewide Net Metering Rule and Renewable Portfolio Standard Are in Effect

Nevada's net metering rule applies to all investor owned utilities and it allows solar, wind, biomass, hydro and geothermal to qualify, and is important for ZEH construction. Size of the residential systems is limited to 150 kW, and the limit on total capacity is 1 percent of a utility's peak capacity.

ZEH DSM Program Submitted by Nevada Power (attached)

Nevada Power has one of the country's first official ratepayer-funded ZEH programs. This innovative program was submitted to Nevada regulators in July 2006. The proposed three-year program strives to put in place complementary policies and ZEH-friendly tariffs, while resulting in a very modest 25-50 homes. The advocacy community will probably move to speed-up the implementation of this trend-setting program, which further assists ZEH efforts in Nevada.

New PUC Commissioner is a ZEH Champion and Former State Energy Office Director...

The new PUC Commissioner Rebecca Wagner is the immediate former Nevada State Energy Office Director, and a ZEH champion. Ms. Wagner was working on obtaining ZEH funding from DOE prior to leaving the State Energy Office. While only one of several Commissioners, She can play a very important part in the future with respect to Nevada ZEH policy.

Working in Nevada, we are constantly reminded that the state is divided, and northern Nevadans consider themselves completely separate from Southern Nevada, and vice versa. The Southern Nevada Home Builders Association (SNHBA) represents many builders who build to *Energy Star* standards and/or above code. The Builders Association of Northern Nevada (BANN) is very interested in ZEH communities. The Reno and Carson City suburbs are experiencing significant growth, prompting Northern Nevada builders to sometimes stress that their markets will be more lucrative than Southern Nevada in the near term. This unique “north vs. south” issue adds a bit of complexity to state ZEH efforts.

Nevada’s Residential Energy Code

Nevada’s residential energy code is the 2003 IECC for all jurisdictions that have not adopted their own energy code. Nevada has no set schedule for updating their residential energy code. The most recent energy code update was adopted in Nevada on June 17, 2005.

Existing New Residential Construction Programs

Sierra Pacific Power supplies electricity to northern Nevada, while **the Nevada Power Company** supplies electricity to southern Nevada. Both are subsidiaries of the Sierra Pacific Resources holding company, which also supplies natural gas to northern Nevada. Both utilities support and participate in the *New Construction Builder Support (NCBS)* program. The focus of this program in southern Nevada is on building awareness of the *Energy Star* program, and installing highly energy-efficient air conditioners through utilities, builders and suppliers. The Northern Nevada focus was unspecified by utility program managers.

As reported in earlier tasks, there are presently at least 52 *Energy Star* builders in Nevada, 17 of which produce only *Energy Star*-rated homes. As of September 2005, 40,356 *Energy Star*-labeled homes had been built in Nevada—and 44 percent of these had been built in the previous 12-months. Nevada utilities also focus on sponsoring *Energy Star* new appliances.

Existing Solar Incentives

Nevada homeowners and business owners interested in investing in solar systems can participate in the Solar Generations Demonstration Program. The utilities are offering an incentive of \$3.00/Watt for solar installed, and the application period opened in July, 2006.

Nevada has a Renewable Portfolio Standard which is another potential source of funding for solar energy projects. Both NPC and SPPC issue requests for proposals for solar projects in Nevada. Individuals, companies, and/or developers are eligible to bid to sell the renewable energy credits or RECs (1 REC = 1 MWh of eligible renewable electricity) generated by a solar project to the utility.

In Nevada as in many other states, the value increase associated with the addition of a solar system to a home or business does not increase the value of the property for tax purposes ([NRS § 361.079](#)).

Existing Net Metering:

With the passage of AB236 in 2005, solar systems up to 30 kW receive full retail net metering. The utilities are required to install a bi-directional meter at no charge to the customer and if there is net excess production over the billing cycle, the excess kWh can be carried over to the next month. At no point in time is the utility obligated to compensate the customer for excess production.

Solar systems between 30 kW and 150 kW can take advantage of a reduced level of net metering, which is not compensated at the full retail rate. Solar system owners are required to install a production meter on the solar system and all kWh produced by the solar system are compensated at the wholesale rate of electricity, as opposed to the retail rate. This significantly reduces the economic value of large solar installations in Nevada.

Draft Policies/Recommendations

ZEH market penetration occurred in California due to four primary factors:

- *Local government incentives and favorable policies*
- *State government incentives and favorable policies*
- *Federal government incentives and favorable policies*
- *Utility incentives and favorable policies*
- *BIRA's work to integrate programs for presentation to builders*

California experience shows that this combination is optimal for maximum ZEH market penetration. Suggested recommendations and associated policies are listed below, organized by:

- a) Local government recommendations
- b) State government recommendations
- c) Utility recommendations
- d) *Program integration*

Federal recommendations are not discussed intentionally since they are outside the scope of our task.

Local Government Incentives and Favorable Policies: Recommendations

Streamline the solar permitting process, rewarding ZEH builders with faster plan check (50 percent faster than the norm, or a two week turnaround, whichever is faster)

ZEH builders and California builders in general value faster plan check and the special recognition that usually accompanies ZEH developments. Early adopters found that ZEH homes actually slowed down the permit process since city building departments often did not know how to review photovoltaic plans for new homes. If the city designates a single point of contact and ensures the builder that their ZEH plans will be expedited, more ZEH construction is likely. Lack of adequate, and highly varied, local government building department protocols for photovoltaic packages is one of the technical barriers that can be addressed through this recommendation.

The city of San Diego incentivizes solar through the permitting and inspection process. Permit applications for any residential construction projects generating more than 50% of expected load with on-site renewables, or commercial projects generating more than 20% go to the “top of the pile,” and are processed first. This is an innovative way to incentivize solar energy into new housing developments.

Consider a flat permit fee for solar systems

Permit fees in northern California local governments ranged from \$50 to \$1,500 for the

same rooftop-mounted solar PV system. Implementing a flat fee adds important certainty for the home buyer, builder, and local governments. At a minimum, a flat fee is considered a gesture of good will, and it addresses another financial hurdle associated with ZEHs.

Start a ZEH recognition program that recognizes both the builder and the consumer

California builders value the recognition provided by local governments for their ZEH efforts. This recognition helps the builder differentiate their product(s), and it helps them build important community support. Recognition can take place at formal City Council or County Board of Supervisors' meetings, or via local government newsletters, government-owned cable channels, and/or local newspapers. Recognition efforts help move the ZEH market.

Sponsor an energy code training program for builders, Building Officials and building department staff

California experience has shown that one of the best methods for building support for ZEHs and subsequently overcoming the technical barriers associated with solar installations is to organize and implement "builder energy code training" sessions for public officials and builders. The sessions work with both builders and local government Building Department staff in the same room. The two different groups benefit from learning the other's perspective. These sessions can ease concern about solar installations and ZEHs while also remedying technical barriers encountered by both government officials and builders.

Once you have your first ZEH builder, recognize the builder with a City Council or County Board resolution

City- or county-sponsored resolutions are very easy to prepare, and valued highly by builders. This easy policy to implement also helps with public visibility of ZEHs. By rewarding builders for the environmental and economic improvements that result from ZEH communities, such as cleaner air and more "money for the malls" due to lower energy bills, local governments link ZEHs and builders to important benefits that may ultimately interest the consumer in purchasing ZEHs.

Defer a portion (25-50 percent) of the development impact fees due for ZEH homes until the development is finished

Fee deferrals are another relatively easy policy to implement by local governments. The total fees are still collected by the governmental entity, only the fees are collected later than originally scheduled. By deferring the collection of a portion of building-related fees, cities and counties show that they value ZEH communities. Deferring development impact fee on a new ZEH is a huge incentive for a builder that is building 50 or 100 ZEHs. The interest saved on that money improves the builder's bottom line, while negligibly impacting the city or county budget. Fee deferrals are common with low-

income housing projects and historic property renovations, and should be introduced to ZEH developments to show government value.

Lead by example and put solar on city buildings

The City of Riverside, California recently installed solar panels on City Hall not just to save money on utility bills, but also to visibly symbolize their commitment to solar energy. Leading by example in this way sends correct signals to consumers which helps move ZEH markets ultimately.

Add ZEH residential language to any future Green Building resolution related to commercial or government-owned buildings

Numerous cities across the country are passing green building resolutions and/or ordinances that include language rewarding the construction of commercial and government buildings that meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program. When the government rewards green building practices, it should remember that energy efficiency is the cornerstone of green building and recognize ZEHs as the pinnacle of energy-efficiency achievement. This is another easy policy to formulate and implement.

Start your own ZEH program

By starting their own ZEH programs, cities and/or counties can design exactly what they need and desire. Meeting specific codified energy goals is easier when the program is designed by city or county officials. By including the local building industry and their association(s) and solar manufacturers in the program design phase, local governments can help transform their own home building markets. The technical expertise needed for establishing their own program is available through BIRA and the CEG. The City of Roseville, California did this recently with the help of their municipal utility.

State Government Incentives and Favorable Policies: Recommendations

Strengthen the state residential energy code and provide enforcement dollars

As stated earlier in this report, California's ZEH (and energy efficiency) successes are due in large part to a very strong and enforced energy code. The California Energy Commission (CEC), the state energy regulatory body, ensures that funds flow to local governments for enforcement and training. Strengthening residential energy codes can be an effective way to spur more energy-efficient construction. To be effective, enforcement dollars need to be directed to local governments so that builders are encouraged to meet the energy code.

Create a ZEH tax credit to complement other state and federal tax credits

Establishing a ZEH tax credit is a straightforward, yet time consuming recommendation.

The idea is to provide more funds to the home owner considering whether or not to build to ZEH standards. The extra ZEH tax credit could help persuade the home owner to purchase a ZEH. Here is an example:

Homeowners in our pilot states who install solar energy systems will receive a tax credit from the federal government worth 30% of the system cost, capped at \$2,000. The credits apply to new homes “placed in service” between January 1, 2006 and December 31, 2007. The IRS considers the date of occupancy on new homes as the date the home was placed in service.

In New Mexico, the state offers a solar market development tax credit limited to \$9,000.00 for the solar system home owner but it cannot go beyond 30-percent of the solar system’s cost when combined with the federal tax credit.

Builders also can receive a \$2,000.00 tax credit for a home if it is built 50-percent beyond the International Energy Conservation Code (IECC). Since a ZEH home is at least 60 percent beyond the IECC, a ZEH builder will receive this credit in any of our pilot states.

Therefore, a \$20,000.00 solar system in New Mexico would see the following tax credits:

Builder:	\$2,000.00 (federal tax credit for 50% beyond the IECC)
Buyer:	\$2,000.00 (maximum federal solar tax credit)
	\$4,000.00 (maximum New Mexico solar tax credit)
Total:	\$8,000.00 (total tax credits applied toward system)

The out-of-pocket costs for this solar system to the home owner would be \$12,000.000. (Of course, utility energy-efficiency incentives, usually ranging between \$300.00 and \$1,000.00, can off-set this cost even further.

With an additional ZEH tax credit of \$2,000.00 (for super-efficient, above-code and solar construction) the total out-of-pocket cost for the home owner would come down to \$10,000.00, bringing the total incentives available to 50-percent of the cost of the total solar system. This extra \$2,000.00 can make a substantial difference in the consumer’s purchasing decision.

Another important consideration is the recipient of the tax credit. The homeowner currently receives the solar tax credit for a system that, in ZEH subdivisions, is a standard feature in all homes. Builders would be more likely to opt for ZEH subdivisions if the tax credit went to the builder rather than the consumer.

Strengthen existing Renewable Portfolio Standards (RPSs)

Renewable Portfolio Standards are proven to stimulate utility investments in solar technologies. Arizona just updated their standard to a 15-percent requirement by 2025. By requiring utilities to meet mandated targets, photovoltaic applications on ZEHs

become more important. Since all three pilot states have RPSs, the only feasible recommendation at this time (for NV and NM) is to strengthen (increase) the RPS to reflect a higher percentage of required renewable energy supply.

Fund local government energy code training for Building Officials, Building Department staff and builders;

For the reasons outlined above (*Local Government Incentives and Favorable Policies: Recommendations*), statewide energy code training is a valuable policy.

Fund enforcement of the state residential building code

For the reasons outlined above (*Local Government Incentives and Favorable Policies: Recommendations*), enforcing the state residential energy code training is valuable.

Fund and/or manage a utility-funded energy efficiency and renewable energy outreach and marketing campaign

California funds the *Flex Your Power* (www.fypower.org) outreach and marketing campaign to keep energy efficiency and renewable energy in front of the public and policy makers. California is planning a separate, targeted consumer outreach campaign for its recently enacted California Solar Initiative. Consumer awareness of the importance of energy efficiency and of the availability of products such as ZEH's is critical to the success of a ZEH program. Statewide marketing and consumer outreach campaigns are very important to transformation of state markets.

Put in place a fair net metering policy (model attached)

Fair net metering policy is one of the most important "critical elements" identified by BIRA and CEG. Without a fair net metering policy, utilities can and do make it exceedingly difficult for widespread market penetration of ZEH. Please see the model net metering rules espoused by the Interstate Renewable Energy Council (IREC) that are attached to this report.

Develop standardized interconnection procedures for solar electricity that are open and fair

Like net metering, interconnection procedures are crucial to the success of ZEHs (and solar in general). Unfair interconnection procedures are one of the major hurdles for solar energy across the U.S. Our pilot states need uniform, standardized interconnection standards that are easy to understand and cost-effective.

Utility Incentives and Favorable Policies: Recommendations

Start a “second-tier” new residential construction program for ZEHs that rewards builders and home buyers for going beyond Energy Star levels.

The idea of a “second tier” of utility-funded, rate-based or public goods-funded ZEH program that goes beyond basic *Energy Star* levels to every pilot state. By formally beginning a separate ZEH or a ZEH/DSM program, such as the one Nevada Power submitted to state regulators in July of 2006 or California’s new New Solar Home Partnership, ZEHs become more mainstream, and consumer awareness follows—not to mention HUGE energy and environmental savings. However, the idea is slow to catch on due to a number of factors. For example, in New Mexico, PNM supports the ZEH second-tier idea but does not want to do “too much” to the builders, since they just now are finally starting an *Energy Star* new homes program. BIRA and CEG will continue to promote this useful recommendation.

Fund an energy efficiency and renewable energy consumer outreach and marketing campaign

For reasons outlined above (*State Government Incentives and Favorable Policies: Recommendations*), a statewide outreach and marketing campaign can help radically transform pilot state markets. Every pilot state would benefit from such a campaign.

Experiment with time of use (TOU) rates with ZEH communities so that home owners are rewarded for producing electricity during peak times when energy prices are higher, and the value of their PV-produced electricity is higher

Time of use (TOU) rates can allow the home owner to benefit by selling photovoltaic-produced electricity back to the utility during peak times at a higher (peak) price, as opposed to the way it occurs now in most utility territories, where the home owner is allowed to sell the power back to the utility during peak times, but the home owner is not paid the higher (peak) price for the electricity they provide. ZEH time of use rates are worthy of further consideration and experimentation in our pilot states. TOU rates can equitably reward solar system owners for the value of the energy they generate.

Fund local or state energy code training for Building Officials, Building Department staff and builders

For reasons outlined above (*Local Government Incentives and Favorable Policies: Recommendations*), utility funding of energy code training programs is one of the most important recommendations that can translate to more ZEHs in our pilot states. It has been proven to result in more ZEHs in California—it is tested, and has been evaluated—it works!

Provide energy efficiency and solar rebates to ZEH builders

Additional energy efficiency and solar rebates can help persuade builders and home owners who may be slow to purchase ZEHs. Rebates are proven in California to spur investments in both solar and energy efficiency ZEH technologies. Adding more rebates in this area is consistent with existing utility rebate programs in place in our three pilot states, especially *Energy Star* appliance and new home construction rebates.

Consider performance based incentives or feed-in tariffs to consumers

New Mexico has piloted paying a higher rate for electricity generated by qualified solar systems and found it to be a good incentive to building owners to install solar. Feed-in tariffs have been very effective in Germany to encourage home and building owners to install renewable energy generators. This approach should be tested further.

Program Integration

Many of the desired program elements exist in the pilot states, but they are not packaged such that a builder would know to, or know how to implement them in a straightforward way. The same is true in California, where BIRA has worked closely with the state and local governments and utilities to clearly define how the programs can work synergistically for ZEH builders. Further, BIRA has teamed with utility partners such as the Sacramento Municipal Utilities District (SMUD) to assist builders in the development and implementation of ZEH communities. This technical support is currently vital to the success of a ZEH community.

Based on the success that BIRA and SMUD have had with ZEH communities, SMUD is in the process of revamping their residential new construction and solar programs to be a single, complete ZEH package. BIRA is working with a team in New Mexico to integrate the New Mexico programs into a single, unified ZEH program that can be provided to and implemented by builders.