

MINUTES OF THE  
MARICOPA ASSOCIATION OF GOVERNMENTS  
BUILDING CODES COMMITTEE

February 18, 2009

Maricopa Association of Governments Office  
Cholla Room  
Phoenix, Arizona

COMMITTEE MEMBERS

Michael Clack, Scottsdale, Chair  
\*Ken Sowers, Avondale  
Phil Marcotte, Buckeye  
\*Mike Tibbett, Carefree  
Mike Baxley, Cave Creek  
A-Alex Banachowski, Chandler  
Mary Dickson, El Mirage  
\*Peter Johnson, Fountain Hills  
\*John Smith, Gila Bend  
\*Jo Rene DeVeau, Gila River Indian  
Community  
A-Ben Cox for Ray Patten, Gilbert  
Bryan Woodcox for Deborah Mazoyer,  
Glendale

Bill King for Ed Kulik, Goodyear  
John Rae for Chuck Ransom, Litchfield  
Park  
Tom Ewers, Maricopa County  
A-Steven Hether, Mesa  
Bob Lee, Paradise Valley  
Cheryl Mullis for Dennis Marks, Peoria  
\*Tom Wandrie, Phoenix  
\*Dean Wise, Queen Creek  
Forrest Fielder, Surprise  
A-Michael Williams, Tempe  
Mario Rochin, Tolleson  
John Stigsell, Youngtown  
Rus Brock, Home Builders Association

OTHERS IN ATTENDANCE

Tom Weeks, American Solar Electric  
Mark Skidmore, American Solar Electric  
Tom Acston, Arizona Solar Energy Industry  
Assoc.  
Jerry Petruk, Eaton Electric  
A-Dave Nakagawara, Chandler  
Autumn Hartsoe, Goodyear  
Russ Patzer, Sun Valley Solar Solutions  
Jim Burch, Glendale  
Drake Nelson, Dupont  
Paul Trombley, Surprise  
Ed Peaser, Scottsdale

Ron Sprague, ETA Engineering  
Albert Laird, SolarCity  
Clint Taylor, ASC  
Andy Weissman, Eaton  
Bryan Gernet, APS  
Kyle Woolfolk, APS  
Scott Brady, Eaton  
Mike Reshford, McKyle Electric  
Anthony Floyd, Scottsdale  
Steve Iam, Eaton Electric  
Greg Bitz, Solar Design  
Nathan Pryor, MAG  
Heidi Pahl, MAG

\*Those members neither present nor  
represented by proxy.

A-Those members participating via  
audioconference

V-Those members participating via  
videoconference

1. Call to Order

Michael Clack, Chair, called to order the February 18, 2009 meeting of the MAG Building Codes Committee (BCC) at 2:02 p.m.

2. Introductions

Voting members Alex Banachowski, Steven Hether, Michael Williams and proxy Ben Cox attended via telephone conference call. All members introduced themselves.

3. January 21, 2009 Meeting Minutes

Mary Dixon said she had two corrections. She noted it was Bill King not Ed King from Goodyear and the second correction was a typographical error in the spelling of Kendall Baxley from HBACA. It was moved by Bob Lee, seconded by Bryan Woodcox and unanimously recommended to approve the January 21, 2009 meeting minutes as amended.

4. Call to the Audience

No comments were received from audience members.

5. Comments From the Committee

Michael Clack said since the last MAG BCC meeting discussion on the Tyvek system and one-coat stucco he had an opportunity to speak with Michael Beaton of the ICC Evaluation Service (ES). Mr. Clack conveyed that Mr. Beaton said the items that have been approved are going through process, and completed evaluation reports should be available by spring 2009. He said they are doing the listings or evaluation reports for the items as they were tested.

Bob Lee asked for clarification on the intent of the products being tested, and compatible by the July 1<sup>st</sup> date mentioned at the last MAG BCC meeting. He asked if July 1<sup>st</sup> is an issue date, application date, or installation date. Michael Clack said the MAG BCC did not define what was going to happen on July 1<sup>st</sup> but Mr. Clack did say that in Scottsdale his intent is to apply ES reports as they become available. Bob Lee asked if Scottsdale's intent is to require installation per the new listing effective as soon as the ES report is available or by July 1<sup>st</sup>. Michael Clack said he would most likely wait until July 1<sup>st</sup> but would accept it prior to July 1<sup>st</sup> if an ES report was available earlier.

Ben Cox said he discovered a number of existing reports listed on the ICC-ES web site that are valid under older installation criteria. He said according to the ICC, these reports are acceptable until tested or expired. Michael Clack agreed.

Cheryl Mullis said she had a meeting yesterday with the BI/PE forum and noted it is still included in the IRC to use 15-pound felt. Ms. Mullis emphasized that the conversation between Scottsdale and Paradise Valley is just between those two jurisdictions as each jurisdiction needs to determine what is best for them. Michael Clack concurred.

Forrest Fielder said the IRC sent out a notification of pending by-law changes which are fairly substantial for the national organization, so he encouraged all members to review the

changes. Michael Clack said he received the notice and said they submitted it in two ways, one copy as it was written and the other copy with strike-outs.

## 6. Legislative Update

Nathan Pryor distributed two handouts. The first handout was of the MAG BCC-related bills from the State Legislature and the other handout was of the Energy Efficiency and Conservation Block Grant program (EECBG) as part of the federal stimulus package. He encouraged jurisdictions to sign up on the web site if the EECBG is of interest to their community. He said there were only three bills at the State legislature, explaining that they are focused on the budget.

Michael Clack asked if the Arizona State Legislature introduced a bill or was discussing the stimulus package incentives for states to adopt the International Energy Code. Nathan Pryor said he is unaware of a bill or discussion on this topic but would research it further and provide information at the next meeting.

## 7. Photovoltaic System Connections

Michael Clack said this agenda item is a discussion on photovoltaic (PV) systems and invited everyone to join in on this discussion. Mr. Clack recounted a recent story from CNN where a gentleman who owns a solar energy business stated that due to President Obama signing the energy bill into law his company will most likely get more business and may possibly relocate to Arizona. Mr. Clack thanked all the interested parties from the solar industry for attending today's meeting.

Cheryl Mullis gave a report on the Building Inspectors/Plans Examiners (BI/PE) meeting. She explained that a checklist was created and it includes PV systems permit costs. She said they discussed the PV standard plan for MAG jurisdictions. She distributed a handout on items discussed at the meeting. She recommended that the solar companies create an informal work group to resolve issues and to create uniformity and consistency with PV plans submitted to jurisdictions.

Bob Lee said the MAG BCC addressed PV systems in 2002 and encouraged revisiting the topic but not reinventing the wheel. Cheryl Mullis explained that since 7 years have passed, most jurisdictions wish to revisit the issue and she noted that this is a new topic to most jurisdictions. Bob Lee talked about the differences between requiring a structural engineering review if units on the roof are heavy and unsafe, compared to a PV system on the roof that does not require review by a structural engineer. Anthony Floyd said in 2002 some of the factors considered to ensure PV systems on the roof were within safety thresholds for the load-bearing capacities, were the weight of the panels and the live load on the roof. Mr. Floyd said they compared PV systems on a roof with HVAC systems on a roof and determined that HVAC on the roof could cause more damage than PV systems on the roof.

Kyle Woolfolk from APS provided an update on the APS perspective. He noted that there was an update to the 2002 PV system requirements that was done in 2007 and the update removes the utility acknowledgement letter for residential. Michael Clack said there are two issues, one being the weight of the system and the other how the system is attached to the roof.

Mike Baxley asked where the 2007 PV documents were located. Heidi Pahl said the documents are available on the MAG web site.

Albert Laird said that as a solar industry they try to make things affordable for the customer. Mr. Laird said that it is tough to keep things affordable if jurisdictions are asking for a couple of thousand dollars for signed and sealed engineering documents. Albert Laird requested that each solar installation be done on an individual basis. He said building officials can be conservative in terms of safety but should be flexible, so that they are not escalating costs in addition to permits.

Cheryl Mullis said Peoria would accept an engineering document from a solar company but the solar industry would need to design it. Albert Laird said his engineer can provide drawings. Albert Laird said he has another concern with a jurisdiction's plan review staff dictating materials to the solar installation staff.

Rus Brock mentioned that if the industry creates a standard, the jurisdictions can review it and ultimately agree on a standard to obtain uniformity across the region.

Bryan Gernet asked if a standard created by the MAG BCC would be applied throughout the state of Arizona. Michael Clack said a standard created by the MAG BCC would be only for the Maricopa County region.

Bob Lee discussed solar photovoltaic supply and load-side disconnects. Mr. Lee distributed a handout with line diagrams. Mr. Lee explained that John Wiles is a knowledgeable resource in this area and has written material on photovoltaic systems. Mr. Lee read portions of NEC Article 690.

Kyle Woolfolk said yes, supply-side tap used to be the last choice and now it is more common due to larger systems being installed and a load panel that has no breaker space available in older homes. He said APS is seeing more and more supply-side taps being used and APS thinks it is a concern. He said APS wants to ensure it is done safely and there is no Underwriters Laboratories (UL) violation to equipment or panel.

Ron Sprague, electrical engineer, said he has been reviewing that portion of Article 690 and provided his thoughts.

Bryan Gernet said APS prefers load-side taps and a non-fused disconnect. APS described issues with supply-side taps. He said APS puts a utility lock on a disconnect to protect the public. APS expressed their concerns and said they felt it is too burdensome to require two disconnects.

Mr. Gernet said APS has reluctantly accepted two disconnects but will not give customer access to fuses for safety reasons. He said the customer can operate the handle. He said APS feels this is reasonable.

Jim Burch asked if Mr. Gernet has seen other manufacturers put out photovoltaic PV compatible service entrance sections where they build in a line-side tap as part of the UL listing. He said this would require the homeowner to replace their panel so it would be

costly. Mr. Gernet said some electric companies make a ranch panel that would be well suited for this without any issues.

Jerry Petruk explained the ranch panel and its design. Mr. Petruk said there is no problem with PV from a UL point of view. He explained what a UL listing means and provided an example for supply-side tap equipment. He said when there is a code-compliance issue it is the responsibility of the jurisdiction.

Bob Lee said John Wiles brought up the situation where there is a supply-side tap and a simple action of drilling a hole would void that warranty. Jerry Petruk said they take field alterations into consideration. He said warranties in the electrical business do not last 20 years. He said unless the manufacturer engineers and installs all components they do not warranty product. He said they warranty all of their workmanship. Bob Lee asked if there is any way a PV system installer could tap into the supply-side safely. Jerry Petruk said not without re-engineering the panel. Bryan Gernet provided comments on this issue. Jerry Petruk said some install cable that has not been evaluated for the couple tap. If it was factory installed and part of the UL listing one cannot tap into it. Mr. Gernet asked that the metering jaws not be stressed when doing a line-side tap.

Ron Sprague said drilling into a bus on a residence should not be allowed but commercial installation might be allowed. He provided one alternative. Jerry Petruk said no such UL assembly exists. He said residential all-in-one cannot be altered using unauthorized methods as it would not meet with manufacturer's approval.

Kyle Woolfolk said an all-in-one panel with bus bar leaves the option to replace the panel or get a letter from the manufacturer. He said the concern is customer outage in order to replace an all-in-one panel. In a supply-side tap the panel will probably have to be replaced as a solution. Jerry Petruk asked if the manufacturers' engineering services can be left on the table. Bob Lee said yes.

Jerry Petruk asked what SRP thinks about this issue. Kyle Woolfolk said SRP has a fairly rigid stance right now.

Albert Laird said the industry needs to think about getting a wider range of panels.

Albert Laird said as installers they have run into upgrading service panels on older homes which is not as hard of a sell as a new homeowner who has to upgrade a panel that is new. The industry needs to consider getting approval from the utility companies on a better selection of service panels where the main breaker can be downsized. Kyle Woolfolk said with a bus bar panel you can also derate the back fed breaker. Mark Skidmore said it is possible to violate the listing of the breaker if someone derates a main breaker because many panels are not designed to handle it.

Jim Burch said when downsizing the main breaker the city will ask for load calculations for the house to ensure the installer is not downsizing too much for the requirements of the house. Jerry Petruk said the NEC requires the engineer to provision 100 percent for non-continuous and 125 percent for continuous load. He said load calculations take into consideration continuous versus non-continuous.

Bob Lee asked if it would be any better with a load-side tap. Kyle Woolfolk said he has been in discussion with some cities about this and gave an example. Mr. Woolfolk said when it becomes a load-side tap, it is not in the code. He said John Wiles said this should not be allowed. Kyle Woolfolk said APS has discussed this with cities and APS came to the conclusion as shown in the line drawing for the load-side tap. Bryan Gernet said the load-side tap is not common but is allowed in some cities and not allowed in other cities. He read 690.64.B1. Mr. Gernet said the ten foot tap rule does not apply when there are two sources of power. He said the question is, “do you want to backfeed a breaker or can you allow a disconnect that is ‘x’ number of feet away?” He said this has not been addressed. He said APS wants a separate disconnect. Bryan Gernet said he would like an agreed-upon response from MAG BCC on this issue. Kyle Woolfolk said a common response would be helpful for installers.

Forrest Fielder asked what percentage of installations exist where there is no room left for a backfed breaker. Albert Laird said the space in the panel is very seldom the deciding factor; it is the size of the panel. He said there are some larger panels available but they only have so many slots. He said the issue is how much the customer has to feed back into the grid from the solar system. Forrest Fielder said this only applies for supply-side taps.

Bob Lee asked if there are any installers that do load-side taps. Mark Skidmore said yes and explained how this would be done. Kyle Woolfolk said APS worked with the installer and came up with a good solution for the manufacturer, utility company, and consumer.

Bob Lee asked if ground-mounted PV systems arrays need to be protected with a fence. Kyle said yes, per code they do, they need to be covered so you cannot get at the connectors. Ron Sprague said a fence will short it out. Mark Skidmore said in the 2008 code the connectors are required to be locking.

Kyle Woolfolk said APS gets questions about labels. He said APS wants engraved labels into plastic or metal so if customer were to paint over them it would still be readable. He expressed concern that jurisdiction inspectors are placing green tags on the PV equipment without looking at the label. Bryan Gernet said the labels are on the disconnect switch. He mentioned this website: [aps.com/dg](http://aps.com/dg) (distributed generation). He said this website contains a list of labels pertinent to APS.

Bryan Gernet said it seems that everyone is fine with line-side taps but everyone is not fine with load-side taps that are not connected to breakers. Michael Clack thanked the speakers.

Rus Brock said the Post-Tensioned Round Table is a good example where all interested parties got together to deal with issues and create resolutions and common practices that can be applied across the region. Kyle Woolfolk agreed but he suggested the industry set up an informal group. Mr. Clack recommended the industry get together to work on the issue to figure out problems and bring back a recommendation to the MAG BCC.

Cheryl Mullis thanked the solar companies and asked that they be patient with cities as the input from today’s meeting is not going to be put into action in cities immediately.

Jim Burch said Glendale has been training their fire department on PV and he encouraged other communities to do the same with their fire departments as they know very little about the hazards. He provided his e-mail address: [jaburch@glendaleaz.com](mailto:jaburch@glendaleaz.com).

8. MAG Building Inspectors/Plans Examiners (BI/PE) Forum Update

Cheryl Mullis distributed a handout. She provided information on other updates discussed by the BI/PE forum. She discussed the forum's review of the selected actions of the MAG BCC and the fact that they removed items that are no longer relevant. She discussed PV, a survey, and adoption of the new set of codes. Ms. Mullis noted that there are cities and towns charging different amounts for solar fees. Mr. Clack said there will be a limit of \$300 for a solar permit fee. Tom Ewers reminded the group that similar legislation was introduced last year and was not enforced.

9. Updated MAG Building Codes Committee Membership

Chairman Michael Clack reminded members to keep their membership information current and to report any changes to Heidi Pahl.

10. Update Survey of Code Adoption

Michael Clack said he believed the MAG BCC had a consensus of adopting the new codes in January 2010.

Cheryl Mullis said there was a request to have the steel fabricators list updated. Ben Cox said that there are hotel rooms available in Prescott for the AZBO conference.

11. Topics for Future Agendas

No topics were provided.

12. Adjournment

The meeting adjourned at 4:10 p.m.