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From: Jerry D. Smith
To: DGI Interested Parties
Date: 9/28/99 9:33am
Subject: IS Committee Minutes

Attached are approved minutes of the DGI Workgroup Interconnection Standards Committee for special open meetings occurring August 30, September 7 and September 17. These minutes will be filed in ACC Docket Control for:

Docket No. E-00000A-99-0431
General investigation of Distributed Generation and Interconnections for potential retail electric competition rules consideration.

Arizona Corporation Commission

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SEP 29 1999

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NOTICE

SPECIAL

OPEN MEETING OF THE ARIZONA CORPORATION COMMISSION

DATE: Monday, August 30, 1999

TIME: 10:00 a.m.

Hearing Rooms 1 & 2
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

This shall serve as notice of a special open meeting of the Arizona Corporation Commission at the above location for consideration, discussion, and possible vote of the items on the following agenda and other matters related thereto. Please be advised that the Commissioners may use this open meeting to ask questions about the matters on the agenda; therefore, the parties to the matters to be discussed or their legal representatives are requested, though not required, to attend. The Commissioners may move to executive session for the purpose of legal advice pursuant to A.R.S. §§ 38-431.03.A.3. and/or 4. on the matters noticed herein.

The Arizona Corporation Commission does not discriminate on the basis of disability in admission to its public meetings. Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, as well as request this document in an alternative format, by contacting Cynthia Mercurio-Sandoval, ADA Coordinator, voice phone number (602) 542-0838, E-mail csandoval@cc.state.az.us. Requests should be made as early as possible to allow time to arrange the accommodations.

BRIAN C. McNEIL
Executive Secretary

AGENDA

1. Formation of Distributed Generation & Interconnections Workgroup and associated committees.
2. Formulation of scope of work assigned to committees.
3. Commencement of committee work plans.

Arizona Corporation Commission Interconnect Standards Committee Meeting

August 30, 1999

ATTENDEES: Bob Balter (BVA), David Townly (New Energy), Chuck DeCorse TEP), Bill Murphy (City of Phoenix), Barry Kruezer (General), Linda Buczynski (City of Tucson), Mike Ross R. W. Beck), Ed Bieseking (SWG), Caroline Gardiner (SES), Bryan Gernet (APS), Jerry Smith (ACC), Carl C. Brittain (Local 387 IBEW (APS)).

1. First item of business was to select chair persons and a secretary. Bill Murphy and Chuck DeCorse will co-chair, and Linda Buczynski will serve as secretary.
2. The bulk of the meeting was spent clarifying the scope of assignment. It was acknowledged that the combined efforts of the three committees (Siting, Certification, and Permitting Committee, the Access, Metering, and Dispatch Committee, and the Interconnection Standards Committee) will feed into the final report to the Commission. It was also recognized that there were several areas of mutual overlap among the separate committee task lists. For this reason, and for the sake of effective coordination of effort, it will be necessary to provide liason among the three working groups.
3. Actually getting started with the task list, it was agreed to proceed along two paralld and reinforcing paths. The first was to obtain copies of interconnect standards already in place for the participating utilities and for UDCs nationwide who have adopted or revised interconnect standards in response to industry restructuring. The second was to form a writer's outline from our own task list, to be used to organize our mutually agreed upon standards into one body of work.
4. For the next meeting, the Committee will start with the existing standards for participating utilities and work towards identifying the distinctions between the various service territories and establishing categories of application, to the end of consensus on standardization. Standards from other parts of the country may be used as a backstop to identify areas which this Committee may not have considered, to provide examples of means by which specific apparent conflicts were resolved, or even to provide wording of certain sections.

ACTION ITEMS:

Chuck DeCorse will contact Dan Goodrich (SRP), who was not in attendance for this meeting. Chuck will request SRP's interconnect standards and ask that Dan or a representative sit on the Committee. Dan, along with Linda Buczynski, was in attendance of a recent class "Interconnection of Distributed Generation to Utility Distribution systems" (University of Wisconsin at Madison). Dan was to coordinate the exchange of interconnection standards from the utilities sending people to this class, and Chuck will ask that Dan make these standards available to the Committee. As an aside, David Townly mentioned that one of the participants in the Texas standards had attended this class and a video conference had been arranged with the presenters. We might think of doing this after we get down to more specifics.

Linda Buczynski will word process the task list into outline form.

Linda Buczynski will contact Trico for its interconnection standards.

NOTICE

THE ARIZONA CORPORATION COMMISSION
DISTRIBUTED GENERATION & INTERCONNECTIONS WORKGROUP
INTERCONNECTIONS STANDARDS COMMITTEE

DATE: Tuesday, September 7, 1999

TIME: 9:30 a.m.

Pipeline/Safety Conference Room
Arizona Corporation Commission
1200 West Washington Street, 1st Floor
Phoenix, Arizona 85007

This shall serve as notice of a special open meeting of the Arizona Corporation Commission at the above location for consideration, discussion, and possible vote of the items on the following agenda and other matters related thereto. Please be advised that the Commissioners may use this open meeting to ask questions about the matters on the agenda; therefore, the parties to the matters to be discussed or their legal representatives are requested, though not required, to attend. The Commissioners may move to executive session for the purpose of legal advice pursuant to A.R.S. §§ 38-431.03.A.3. and/or 4. on the matters noticed herein.

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BRIAN C. McNEIL
Executive Secretary

Purpose: Refine committee work scope and commence assigned investigation

AGENDA

1. Refine / group assigned Workshop issues.
2. Review existing AZ utility interconnections standards and those proposed for other states.
3. Consider ranges of unit ratings for small, medium, large unit size definition.

Arizona Corporation Commission Interconnect Standards Committee Meeting

September 7, 1999

ATTENDEES: Bob Baltes (BVA), David Townly (New Energy), Chuck DeCorse TEP), Linda Buczynski (City of Tucson), Mike Ross (R. W. Beck), Caroline Gardiner (SES), Bryan Gernet (APS), Jerry Smith (ACC), Carl C. Brittain (Local 387 IBEW (APS)), Kent Crouse (SWG), Bruce Buffum (Southwest Energy Solutions), Carl C. Brittain (Local 387 (APS)), Ron Oñate (APS), Daniel Goodrich (SRP), Karen Errant (Fennemore Craig), Ray Williamson (ACC).

1. There was still some need for clarification about the extent and limits of the committee assignment. It was again established that the Siting, Certification and Permitting Committee and the Market Access, Metering and Dispatch Committee were to execute the tasks under those headings and that this Committee was to recommend safe Interconnection Standards. Those who still have questions might review this breakdown as worked up in the Organizational Proposal at the Workshop of August 31, 1999.

2. The Committee needed to address export power to arrive at an understanding of the extent of its assignment. Jerry Smith confirmed that the ACC's intent was not to place a voltage constraint on the part of the end user, that we are not to deal with just distribution. The distinction is that an IPP is strictly to market, and that the Committee is to deal within the retail customer context.

3. Interconnect standards or guidelines have been obtained from APS, SRP, TEP, ComEd, Texas, and CA ICBM. Followup with Trico determined that the cooperative did not have any such guidelines or standards. It was also noted that there is currently no coop representation on the Committee. In any case once the Committee has arrived at a rough draft of proposed interconnection recommendations, it will be necessary to get the coops at least into the review loop because their circumstances and installations undoubtedly have certain differences compared to the "Big Three", and a statewide standard needs to incorporate all situations within its jurisdiction.

4. AISAA definitions were passed out. Definitions will be an important element in any finalized document for common reference. It is not too early to begin looking into definitions now, but the end state details on such will fall out of the main body of the work.

5. Jerry Smith noted that the documents on hand are in two camps. Other states have developed standards for Direct Access. The standards and guidelines currently being used in Arizona were developed under the old paradigm. Our first approach will be to arrive at an amalgamated document based upon those of the existing UDCs but designed to address the restructured environment. We may also want statewide standards to be more generic, that is to prescribe minimum standards which are complemented by the more specific requirements within each service territory. Again it was noted that the

standards of APS, SRP, and TEP deal with a more urban setting, re-emphasizing the need to get coops at least in the review loop.

6. There was a two-hour "intermission/study hall" during which time all participants had the opportunity to review the standards and guidelines referenced above to the end of beginning to establish consensus among the utilities present as to the establishment of critical breakdowns of power sources interconnected to the grid. The afternoon session was devoted to this task. Strawman breakouts are as follows:

INVERTER <50 KW
 50-300 KW
 >300 KW
SYNCHRONOUS <50 KW
 50-300 KW
 >300 KW
INDUCTION 50-300 KW
 >300 KW

Given these breakouts, it is now possible to establish protection and then telemetry requirements for each classification. It is understood that the subsequent detail will work in such considerations as industrial grade relays, manufacturer certifications of functionality, transformer hookup, synchronizing, and relative size of feeder.

7. Next meeting will be held on Friday, September 17, "upstairs". Before then SRP, TEP, and APS will meet to further refine their consensus on protection standards, given that breakouts for sources have been tentatively established. It is understood that utility participants will be consulting their in-house relay and protection engineers during this process.

ACTION ITEMS

Dave Townly will look into the question of a dedicated transformer, evaluating safety versus operational reasons for such a requirement.

Brian Gernet (APS) will put together the breakdown of source sizes for the meeting with SRP and TEP.

Chuck DeCorse will contact the cooperatives to invite participation in the Committee.

NOTICE

THE ARIZONA CORPORATION COMMISSION DISTRIBUTED GENERATION & INTERCONNECTIONS WORKGROUP INTERCONNECTIONS STANDARDS COMMITTEE

DATE: Friday, September 17, 1999

TIME: 9:30 a.m.

2nd Floor Conference Room
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

This shall serve as notice of a special open meeting of the Arizona Corporation Commission at the above location for consideration, discussion, and possible vote of the items on the following agenda and other matters related thereto. Please be advised that the Commissioners may use this open meeting to ask questions about the matters on the agenda; therefore, the parties to the matters to be discussed or their legal representatives are requested, though not required, to attend. The Commissioners may move to executive session for the purpose of legal advice pursuant to A.R.S. §§ 38-431.03.A.3. and/or 4. on the matters noticed herein.

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BRIAN C. McNEIL
Executive Secretary

Purpose: Continue committee investigation of interconnection standards for distributed generation.

AGENDA

1. Review assigned Workshop issues.
2. Review composite of AZ utility interconnections standards.
3. Discuss need/requirement of dedicated transformer.

Arizona Corporation Commission Interconnect Standards Committee Meeting

September 17, 1999

ATTENDEES: David Townley (New Energy), Chuck DeCorse TEP), Caroline Gardiner (Southwest Energy Solutions), Bruce Buffum (Southwest Energy Solutions) Bryan Gernet (APS), Carl C. Brittain (Local 387 IBEW (APS)), Ron Oate (APS), Daniel Goodrich (SRP), Bill Murphy (City of Phoenix), Prem Bahl (RUCO), Ed Giesecking(SWG), Kent Crouse (SWG).

1. Daniel Goodrich discussed the results of the meeting held between SRP, APS, and TEP and their respective protection specialists regarding the preliminary categorization of interconnected sources. Daniel presented the committee with a memorandum containing a summary of the meeting results and the preliminary utility recommended minimum requirements to interconnect under each category.

2. APS, SRP, and TEP are agreeable to move forward with the preliminary categorization as follows:

- Category 1 0-50kW
- Category 2 50-300kW
- Category 3 300kW-5MW
- Category 4 Greater than 5MW

Utility grade relays will be required for applications greater than 300kW. There was additional discussion in regards to extending the Category 2 from 50-300kW to 50-500kW. APS, SRP, and TEP were opposed to this change stating that 300kW was the most liberal limit they are comfortable with.

3. The committee reviewed the "Minimum protection Requirements for all generators" listed in Daniel Goodrich's memorandum.

Consensus was reached on the following changes to the minimum requirements:

- All distributed generation facilities which will export power, may be mandated to comply with additional interconnection requirements beyond the minimums listed. Those additional requirements will be dependent on the location of interconnection, number of other interconnections on the applicable feeder, cost of system protection, etc.
- Changes from the memo in regards to isolation transformer requirements were agreed upon as follows: "An isolation transformer (for generators greater than 10kW) may be required subject to review by the applicable interconnecting utility.

4. The committee reviewed the "Additional requirements for generators 50kW to 300 kW" listed in Daniel Goodrich's memorandum. The key area of discussion was utility ground fault protection. Although discussed at length, no resolution was reached. The topic remains open to discussion.

5. Consensus was developed for two other minor issues through the discussion. Those items are as follows:

- All interconnected customers will be required to complete an application with the applicable paralleled utility.
- By categorization, any unit greater than 50kW is considered to be 3 phase.

6. Time limitations prevented sufficient discussion of all pertinent issues on the protection requirements memorandum. Majority agreement was reached to proceed with a preliminary draft of interconnection guidelines. The preliminary draft will start with a minimum of the following key items:

Definitions
General Requirements
Specific Requirements – by category and by technology type
Testing Requirements
Application Form – Technical Requirements

7. The next meeting will be held on Thursday, September 23. Chuck DeCorse will arrange for a meeting room.

ACTION ITEMS

Brian Gernet (APS), David Townley (NE), and Chuck DeCorse will jointly develop the preliminary draft interconnection guideline.

Chuck DeCorse will determine where the next meeting will be held. (Perhaps the meeting could be held at SRP or APS if a conference room at the ACC is not available?)

Jerry Smith to communicate two points of concern to Tariff Committee as follows:

1. Interconnection applications which will export may receive VAR support from the utility grid. There is currently no structure or tariff provision to measure and collect for VAR support. Tariff Committee should resolve this issue.
2. Impact of interconnected customer peak demand load due to outages (planned/unplanned) needs to be addressed by committee covering tariff issues.

Kent Crouse to complete and send out minutes.