Memorandum

From the office of
Commissioner Brenda Burns
Arizona Corporation Commission
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TO: Docket Control

ORIGINAL

DATE: Monday, August 25, 2014

FROM: Office of Commissioner Brenda Burns

SUBJECT: Docket No. E-01345A-13-0069

Attached are APS's supplemental responses to technical questions from the Sedona Smart Meter Awareness group. Please be aware this has also been docketed under docket # E-00000C-11-0328.

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August 1, 2014

Commissioner Brenda Burns
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

RE: Supplemental Responses to Sedona Smart Meter Awareness Group Questions

Dear Commissioner Burns:

Attached please find Arizona Public Service Company's (APS or Company) supplemental responses to Questions #5 and #26 of the informal questions you forwarded to us on behalf of the Sedona Smart Meter Awareness Group (Group) earlier this year. These supplemental responses address those questions the Group asked during the meeting held on Thursday, July 17 to which APS did not have an immediate answer.

Additionally, the Group provided a snapshot of an APS meter that did not have an FCC ID affixed to the meter. APS has conducted a search of its automated meters and has found approximately 300 meters in use throughout the Company's service territory which have no FCC ID on the meter, with another 100 or so still in inventory. The Company believes this oversight occurred during manufacturing. APS will be affixing an FCC ID to each of these meters as soon as practical.

Please feel free to contact me if you have any questions.

Sincerely,

Barbara Lockwood

Barbara Lockwood

SEDONA SMART METER AWARENESS QUESTIONS TO ARIZONA PUBLIC SERVICE COMPANY

Question 5: What is the transmission range or geographical coverage for each of the above mentioned equipment - smart meter, repeaters, routers, collectors, antennas, etc.?

Response: Transmission ranges for Node Meters and Gatekeeper Meters are dependent on several factors, including height of the transmitting and receiving devices, orientation of the meters, and the surrounding environment (obstacles, etc.). For Node Meters deployed by APS, an average, entirely unobstructed range for point-to-point communications is approximately 2500 feet in an urban environment and approximately 5800 feet in a rural environment.

Supplemental Response: The cellular radios in Gatekeeper Meters within the APS Mesh Network utilize pre-existing cellular network towers to transmit information. A Gatekeeper Meter typically needs to be within a 20 to 40 mile range for transmissions from the meter to reach the nearest cellular tower.

SEDONA SMART METER AWARENESS QUESTIONS TO ARIZONA PUBLIC SERVICE COMPANY

Question 26: For a Smart Meter, what is the amount of RF emissions the FCC designated at the source (at a distance of 20 centimeters from the meter) when a meter is transmitting data (instantaneous maximum peak level, averaged over 30 minutes)? What is the Transmission Power in mW? What is the Antenna Gain in Decibel Isotropic? What is the Instantaneous Peak Level (Effective Isotropic Radiated Power)?

Response: Devices must be certified by the FCC to meet Maximum Possible Exposure (MPE) requirements as specified in FCC Regulation CFR 1.1310. The limits specified by the FCC are based on frequency and the values are averaged over a 6-minute time period. The power density limit for the 900 MHz band is 0.6 mW/cm^2. The FCC validates a device using a calculation distance of 20 centimeters. In the MPE report for the Node Meters in use at APS, the transmit power was measured to be 232 mW, the maximum antenna gain is 3.66 (5.63 dBi) and the distance is 20 centimeters. This results in a calculated power density of 0.169 mW/cm^2 which is 0.431 mW/cm^2 below the limit. These calculations assumed the device was transmitting 100% of the time during the 6-minute averaging period, which is not a valid assumption for these devices.

These raw power density calculations do not take into account how often a device is transmitting. A typical electricity meter has an overall transmit duty cycle (scheduled and unscheduled transmissions) of less than 1% (it transmits less than one percent of the time). The average power density would therefore be 1/100 of the maximum calculated power density, resulting in an exposure value of 0.28% of the FCC limit.

Supplemental Response: Exposure to automated meter radio frequency energy is considered by the FCC to be "occupational/controlled" exposure and, as such, is tested for compliance with FCC established MPE standards over a 6-minute averaging period. The 30-minute averaging period utilized by the FCC for "general population/uncontrolled" exposure standards therefore does not apply to automated meters, and APS has no knowledge of any studies measuring automated meter radio frequency exposure using that averaging period.