FOX CANYON GROUNDWATER MANAGEMENT AGENCY

A STATE OF CALIFORNIA WATER AGENCY

NOTICE OF MEETING

NOTICE IS HEREBY GIVEN that the Fox Canyon Groundwater Management Agency (FCGMA) will hold an **Operations Committee Meeting** at **1:00 p.m.** on **Thursday**, **September 14**, in the **Pacific Conference Room**, at the Ventura County Government Center, Hall of Justice, Main Level at **800 South Victoria Avenue**, **Ventura**, **California**.

FCGMA OPERATIONS COMMITTEE MEETING AGENDA

September 14, **2017**

Members: Chair Steve Bennett
Co-Chair Robert Eranio

A. Call to Order

B. Introductions

C. Public Comments – Audience members may speak about FCGMA-related matters not on today's Agenda.

D. Approval of Minutes – Consider approval of minutes from the August 10, 2017 Operations Committee meeting

E. Agenda Review

F. Update on NRCS Grant and AMI Timeline

G. AMI Equipment Ownership Discussion

H. AMI Performance Specifications

I. Staff Policy Recommendations

J. Adjourn Operations Committee Meeting

NOTICES

The FCGMA Board strives to conduct accessible, orderly, and fair meetings where everyone can be heard on the issues. The Board Chair will conduct the meeting and establish appropriate rules and time limitations for each item. The Board can only act on items designated as Action Items. Action items on the agenda are staff proposals and may

be modified by the Board as a result of public comment or Board member input. Additional information about Board meeting procedures is included after the last agenda item.

Administrative Record: *Material presented as part of testimony will be made part of the Agency's record, and 10 copies should be left with the Board Clerk. This includes any photographs, slides, charts, diagrams, etc.*

ADA Accommodations: *Persons who require accommodation for any audio, visual, or other disability in order to review an agenda or to participate in the Board of Directors meeting per the Americans with Disabilities Act (ADA), may request such accommodation in writing addressed to the Clerk of the FCGMA Board, 800 South Victoria Avenue, Location #1610, Ventura, CA 93009-1610, or via telephone by calling (805) 654-2014. Any such request should be made at least 48 hours prior to the meeting so staff can make the necessary arrangements.*

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Availability of Complete Agenda Package: *A copy of the complete agenda package is available for examination at the FCGMA office during regular working hours (8:00 a.m. to 5:00 p.m. Monday through Friday) beginning five days before the Board meeting. Agenda packet contents are also posted on the FCGMA website as soon as possible, and left there for archival retrieval in case reference is needed on previously considered matters. Questions about specific items on the agenda should be directed to the Agency's Executive Officer.*

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Continuance of Items: *The Board will endeavor to consider all matters listed on this agenda. However, time may not allow the Board to hear all matters listed. Matters not heard at this meeting may be carried over to the next Board meeting or to a future Board meeting. Participating individuals or parties will be notified of the rescheduling of their item prior to the meeting. Please contact the FCGMA staff to find out about rescheduled items.*

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Electronic Information and Updates*: Visit http://www.fcgma.org (for home page information) or Facebook (for meeting updates). Information available online includes the Board's meeting schedule, a list of the Board members and staff, weather station data, general information, and various Agency forms. If you would like to speak to a staff member, please contact the Clerk of the Board at (805) 654-2014.*

FOX CANYON GROUNDWATER MANAGEMENT AGENCY

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MINUTES

Minutes of the Fox Canyon Groundwater Management Agency's (FCGMA) Operations Committee meeting held **Thursday, August 10, 2017 at 2:00 p.m.** in the Atlantic Conference Room at the Ventura County Government Center, Hall of Administration, 800 South Victoria Avenue, Ventura California.

A. Call to Order

Chair Bennett called the meeting to order at 2:00 p.m.

B. Introductions – In attendance were: (1) Steve Bennett, FCGMA Operations Committee Chair; (2) Robert Eranio, FCGMA Operations Committee Co-Chair; (3) Arne Anselm, WPD, Deputy Director; (4) Kim Loeb, WPD, Groundwater Manager; (5) Alma Quezada, Groundwater Specialist; (6) Keely Royas, FCGMA Clerk of the Board; (7) Kathy Jones, FCGMA Business Process Coordinator; (8) Matthew Fienup, California Lutheran University (CLU); (9) Daniel Howe, Ranch Systems; (11) Carol Schoen, Zone Mutual Water Company.

C. Public Comments

There were no public comments.

D. Background on FCGMA's Advanced Metering Infrastructure AMI Effort

Mr. Anselm presented some background information on the idea of AMI to the FCGMA, which started in August 2015. He stated that it started as a proof of concept which turned into a broader range of pumpers in May of 2016. He explained that a workshop was held for growers who expressed opinions and concerns, which was turned into a draft ordinance. He also stated that the move forward to install AMI on all active agricultural wells will be partially funded by a grant awarded by the NRCS to The Nature Conservancy and the FCGMA.

Ms. Quezada provided more details on when and why the conversation of AMI installation started. She stated that the FCGMA was approached by vendors to help address the problem of non-reporters, under-reporters and over-drafted basins.

Mr. Fienup commented that the grower's group proposed universal AMI installation after targeted deductions had not been met.

E. Discussion on AMI Policy Considerations

Mr. Anselm went over some of the existing policy issues in implementation, equipment, data management and compliance verification. A discussion was had between committee members, FCGMA staff and meeting attendees regarding the issues in these categories. The discussion resulted in the following decisions:

Implementation

- Large users defined by wells that pump more than 50 gal/min
- Wells with AMI currently, will not be reimbursed
- All large user active wells will require AMI installation by January 31, 2019
- All large inactive wells will require a flowmeter and AMI by January 31, 2019
- All small users will require meters by January 31, 2020
- Small Water Companies required to install AMI by January 31, 2020

Equipment

- FCGMA will pay for AMI by one selected vendor
- Pros and Cons list needed for AMI Meter GMA or Grower ownership

Data Management

- GMA will pay for one central database
- GMA will get monthly totals by state well number
- Growers will get access to their data
- Well owner/operator responsible for cost on a separate contract

Compliance Verification

- Phase in smart meters within ten year time period
- Require tamper detection devices on equipment to notify GMA and well operator
- 72 Hour notice of inspection to well owner/operator
- Obtain warrant after two declined notices
- Limit inspection to equipment attached above ground
- Set penalties to decrease violating the ordinance

F. Adjourn Operations Committee Meeting

Chair Bennett adjourned the meeting at 3:41 p.m.

Submitted by:

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Keely Royas
FCGMA Clerk of the Board

NRCS Grant Action Item Timeline

	2017								2018												2019			
	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A
Grant Agreement																								
Draft and adopt Grant Agreement with TNC				X	X																			
AMI Installation																								
Draft AMI Policy and equipment specifications			X	X	X																			
Draft and adopt AMI Ordinance and resolution of specs			X	X	X																			
Write and Distribute Request for Qualifications				X	X																			
Interview and select AMI and data management vendors					X	X																		
Draft and adopt AMI User Agreement or Lease						X																		
Negotiate and enter contracts for AMI and data						X																		
Provide AMI Vendor contacts for access and installation						X																		
Work with vendors and pumpers on installation					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Water Market Pilot Phase 1																								
Draft report with recommendations for Phase 2				X	X																			
Present Final Report					X																			
Water Market Pilot Phase 2																								
Draft and adopt new Water Market Ordinance					X	X																		
Draft and adopt revised Exchange Administer Agreement					X	X																		
Draft report with recommendations for Implementation															X	X								
Present Final Report															X	X								
Implementation Phase																								
Draft and adopt revised Water Market Ordinance																X	X							
Draft and adopt revised Exchange Administer Agreement																X	X							
Data Management System																								
Identify data management needs				X	X	X	X	X	X	X	X	X	X	X	X									

AMI Equipment Ownership Evaluation

Issue	Owned by FCGMA	Pro or Con	Owned by Well Owner	Pro or Con
Equipment Selection	Single vendor, unless AMI that meets specifications has already been installed.	Mix of ownership of AMI equipment for systems already in place.	Owner has flexibility with multiple options available as long as performance specifications are met.	Existing AMI systems may need to be replaced or upgraded to meet specs.
		Existing AMI systems may need to be replaced or upgraded to meet specs.		Increased options for Well Owner operations for AMI. New technology can be quickly applied if meets GMA's specifications.
		Limited capabilities of AMI at GMA price point. Well owner may be able to buy-up for increased capabilities from same vendor.		
Life-cycle cost	GMA will need to fund replacement and maintenance.	Opportunity to control phase in of new technology.	Individual well owner's responsibility to ensure equipment meets specifications	New technology can be phased in through ordinance.
		All well owners will contribute to fund		Inspections required to ensure compliance.
		Well Owner may incur additional costs for system improvements to meet business needs.		
		GMA can upgrade to owning smart meters		
Inspection	Mandated by ordinance, performed by GMA staff or certified technician.	Increased response time for inspection, and repairs.	Mandated by ordinance, performed by GMA staff or certified technician.	Due process to ensure repairs are made, employ enforcement procedures if necessary.
Service and Maintenance	Contract with certified technician or certify staff.	Contract management. Troubleshooting may include non-GMA owned equipment. Vendor responsible during warranty period GMA maybe responsible in errors in pumping totals. Potential need to hire and train staff.	Contract with certified technician.	Direct scheduling for downtime increases flexibility for needed access. Vendor responsible during warranty period

AMI Equipment Ownership Evaluation

Tamper Alarms	Sent to Owner and GMA	Owner given 24-72 hours to address. May trigger inspection. Some errors will be responsibility of GMA to correct and will require access.	Sent to Owner and GMA. All errors to be corrected by owner. May trigger inspection	Owner given 24-72 hours to address, response required. May trigger inspection and increased data collection.
Liability	Increased liability for FCGMA	Potential for problems when connecting to existing fixtures	Responsible for their equipment and reporting of extractions	No liability for GMA
		Potential GMA responsibility for misreported data		
		Insurance for equipment and liability may be needed		
	Potential for accidental damage by Well Owners.	Determination of cause of damage and resolution could be resource intensive		
Data	Data managed by FCGMA controlled system		Data managed by FCGMA controlled system	Additional data from system upgrades available
Mutual Water Districts	Not included in grant, may have existing SCADA	Mix of ownership of AMI equipment for systems already in place.	Well owner has flexibility with multiple options available as long as performance specifications are met.	Increased options for Well Owner operations for AMI. New technology can be quickly applied if meets GMA's specifications.
NRCS Grant	Uncertain if equipment is NRCS property until final report, or if allowed to be owned by Well Owner as support to EQIP[1] certified participants.			
Assumptions: ownership is based on a long-term scale.				
[1]EQIP = Environmental Quality Incentives Program is a voluntary program that provides financial and technical assistance to agricultural producers to plan and implement conservation practices that improve soil, water, plant, animal, air and related natural resources on agricultural land and non-industrial private forestland. EQIP may also help producers meet Federal, State, Tribal, and local environmental regulations.				

AMI Performance Specifications

Prepared by the Fox Canyon Groundwater Management Agency of Ventura County, California

The Fox Canyon Groundwater Management Agency is charged with the preservation and management of groundwater resources within the areas or lands overlying the Fox Canyon aquifer for the common benefit of the public and all agricultural, domestic, and municipal and industrial users.

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1. DEFINITIONS

Advanced Metering Infrastructure (AMI) – Is an architecture for automated, two-way communication between a meter and a central data center via cellular, radio, or satellite communication systems to acquire real-time or near real-time groundwater-extraction data.

AMI Field Hardware – All the AMI related components installed in the field. These can include the AMI Module, RTU, meter register, data logger, battery and solar panel.

AMI System – The entire AMI system that includes all field hardware, communication network, central database and a user interface.

AMI Module - A device consisting of a data logger and RTU with a digital output. The term is used interchangeably with "AMI Module."

AMI Vendor Project Manager – The specified employee representing the interests of the AMI vendor for this program during all phases of engagement.

Agency – The Fox Canyon Groundwater Management Agency (FCGMA).

Agency Project Manager – The Agency's employee designated to represent the interests of the Agency for this Project.

Application Programming Interface (API). An API specifies how system hardware and applications should interact.

Central Database – A centralized database that aggregates meter data from an AMI Module to be used by applications including: groundwater management, computerized maintenance management, and other relevant management systems. The central database can be accessed by multiple users and is a key resource for managing large quantities of meter data.

Data Logger – A permanently installed data logger is a device that tracks data going through the meter and has the same or higher environmental protection rating as the meter/register/radio.

FCGMA – Fox Canyon Groundwater Management Agency.

Meter – Is defined as a water meter used to measure the volume of water extracted from a well by well owners / well operators within the jurisdiction of the Agency.

Performance Specifications – Quantifiable and measurable AMI system and AMI component standards of operation desired by the Agency. Examples include meter-read interval, read-success rate, read accuracy, alert-communication time, failure numbers and frequency, out-of-service timeframe, etc.

Remote Telemetry Unit (RTU) - A microprocessor-controlled meter-interface unit with a radio or cellular transmitter and data logger, that records and stores meter readings at prescribed intervals and transmits them to a central database. The RTU may also include a battery, antenna, solar panel and other necessary appurtenances. Some manufacturers may have this item combined in one unit with the register. RTUs can be programmed to calculate and trigger alarms based on operational conditions such as battery life, no-flow, backflow, and tampering.

Register – Is the data-reading unit, usually situated on top of the meter. Registers record the water flow measured by the meter and convey that information to the RTU.

Tamper Detection –Sensors and/or methodology to detect unauthorized modifications of any of the AMI field hardware. Tampering of the AMI components includes wire cutting, meter tilt, register removal, prolonged no flow periods, or any other event detectable by the equipment.

User – A specified well owner / well operator..

User Interface – A web browser or mobile application that provides data access to well owners/well operators and the Agency. Some portals may provide additional functionality such as alert settings, notifications, and/or usage profiling.

Vendor – The successful contractor selected and contracted by the Agency to perform the Scope of Work.

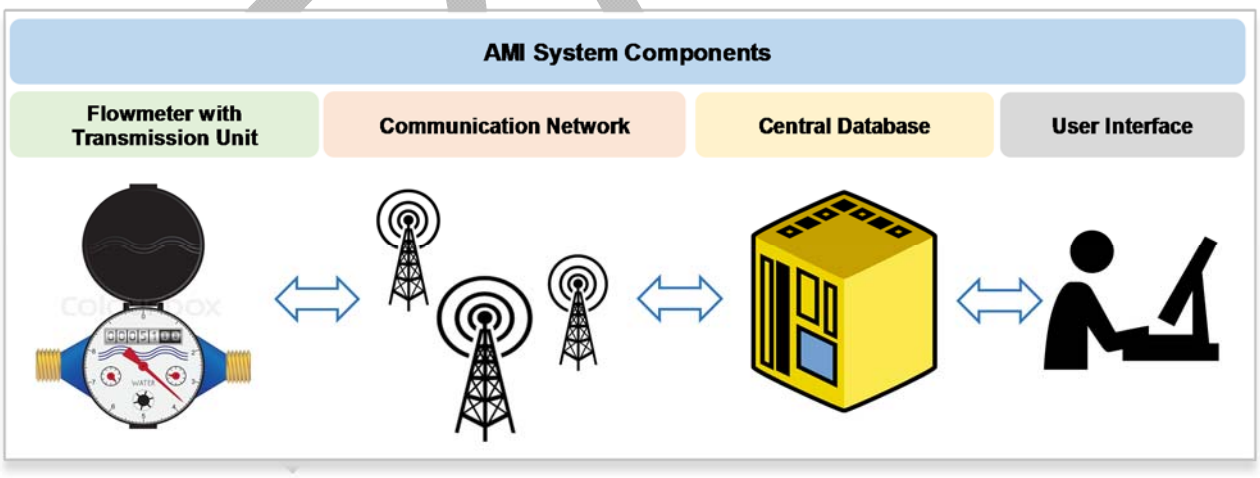

Figure 1: AMI System Diagram

The proposed AMI system configuration may vary from the schematic shown in Figure 1.

2. AMI PERFORMANCE SPECIFICATIONS

2.1 The Agency is committed to selecting the technology that provides the most efficient, cost effective and flexible solution. Proposed AMI solutions must be compatible for use with existing water meters to the extent possible. Proprietary systems not accommodating the existing installed meter base will not be considered.

2.2 The system shall communicate using radio, cellular or satellite transmission technology and be certified to comply with all applicable Federal Communication Commission (FCC) Rules.

2.3 The AMI field hardware enclosures shall be outdoor rated at IP66 or greater protection.

2.4 The AMI field hardware must function accurately and not be damaged over an ambient operating temperature range of -20 degrees Celsius (-4 degrees Fahrenheit) to 55 degrees Celsius (131 degrees Fahrenheit).

2.5 The RTU shall have remote antenna capability, which can be pole or wall mounted.

2.6 The AMI field hardware must reliably communicate with a central database.

2.7 The AMI field hardware shall allow for obtaining real-time or near real-time data upon request by updating the central database within a smaller time interval than the smallest interval of sampled data.

2.8 The AMI Module shall be capable of storing a minimum of one million data points, or 30 MB of meter data on internal data storage, including date and time stamps in as few as five (5) minute intervals for sampled data.

2.9 The AMI Module shall record increasing total consumption.

2.10 The AMI Module shall be capable of receiving meter totalizer data from existing water meters equipped with a wide variety of registers.

2.11 The AMI Module shall be designed and built for installation in proximity to a groundwater well flowmeter.

2.12 The AMI Module shall be IP66 to provide a degree of protection against falling dirt, rain, windblown dust, splashing water, and hose-directed water on the enclosure.

2.13 The AMI Module shall be designed to operate in the above conditions and have a minimum battery life of 5 years, provided adequate charging methods

of solar or AC power. Battery shall also provide a minimum of 7 days reserve power.

2.14 The RTU must support firmware updates to reduce system maintenance time by eliminating the need to manually perform the update function at each locale. System updates shall be performed via telemetry.

2.15 The RTU shall upload the information to the central database a minimum of twice per day.

2.16 The RTU shall use state-of-art data security techniques to prevent unauthorized access to the data

2.17 The RTU shall have the ability to time synchronize all devices.

2.18 Each RTU's clock, date & time settings shall be updated to match central database date & time to within 5 seconds once per day.

2.19 Battery life data shall be transmitted to the central database alerting of low battery levels.

2.20 The AMI system shall employ actionable alerts for the items below:

- Small leak detection
- Large leak detected
- No water flow detected during pump operation set to a specific period of in the central database
- Reverse Flow / Backflow detection – when provided by an existing water meter
- Tamper detection

2.21 Waterproof in-line connectors are permissible to facilitate the installation of the AMI Module.

2.22 The register shall be secured to the meter main case by a tamper resistant device that would show signs of tampering to protect against unauthorized removal of the register.

2.23 No tool shall be required to remove the register that is not available at most full-service hardware suppliers or home improvement centers.

3. CENTRAL DATABASE AND SOFTWARE SPECIFICATIONS

3.1 The Vendor shall provide a managed hosting service, where the Vendor shall own and manage the server hardware and software including monitoring, or use an equivalent Cloud-based service to ensure the server continues to work effectively, provide backup services, installation of

security patches and various levels of technical support. The Vendor hosted solution shall utilize a secure web-based application.

3.2 The data must be downloadable in a non-proprietary, industry standard format.

3.3 The central database shall act as the central collection point for the data within the system. The server collects data from all the AMI Modules and stores the gathered data in a secure database. Once data is stored and analyzed on the server, the data shall be available for display via an easy to use web-based graphical interface.

3.4 The Vendor's managed hosting server shall manage and archive all historical data, such that it can be accessed by computers, handheld devices, or both locally and remotely via the web to allow users to look for long-term trends.

3.5 The central database software must have a web browser interface and shall have defined applications with standard interfaces to allow for existing and planned software applications.

3.6 The central database shall be used to generate reports, view demand graphs, and determine usage patterns.

3.7 Using information from alerts uploaded in the data, the central database shall have the ability to generate specific e-mail alerts or SMS messages for each status code as configured and administered by the User.

3.8 The User Interface shall permit the sending of alert outages, tampering, and out-of-bounds system operating parameters to the specified persons via cell phone, SMS text message, or e-mail.

3.9 Each central database generated alert shall be generated when the system operating parameter is below the specified threshold or when the system operating parameter exceeds the specified threshold.

3.10 Each AMI Module generated alert shall be timestamped.

3.11 The central database shall record increasing total consumption.

3.12 The central database shall store the type of demand quantity recorded in each register and shall be Vendor-configurable through programmable meter settings.

3.13 The vendor shall offer a secure web-based application for well owner/well operator access to consumption data.

3.14 The well owner/operator shall have access to reports for yearly, monthly and hourly data and be allowed to set parameters for email alerts when usage fails to meet the set parameters.

3.15 The Agency shall have access to monthly extraction totals of each well except under certain enforcement situations.

3.16 Reports shall be available in graphical and table views for reading and consumption for various intervals.

3.17 The central database shall be accessible with a secure log in and password to view the system data from any web enabled device.

3.18 In the event that there is an interruption, the AMI system must provide for a notification system that can notify the AMI user of this failure via email, SMS or other.

4. VENDOR SPECIFICATIONS

4.1 The vendor shall be responsible for supplying and delivering the AMI Field Hardware and System components complete, including training, and ensuring the proposed AMI system is operational prior to full deployment. This includes, support for the development of an interface for well owners/well operators and the Agency.

4.2 The vendor shall have a proven program of professional project management to ensure successful system installation.

4.3 Project managers shall be experienced in managing the design, installation and optimization of systems. Project management experience shall include system integration and training support.

4.4 Provide a proposed implementation schedule for a system such as that proposed here.

5. INTEROPERABILITY

The system must have an API interface to make data readily available to other systems. In some cases, meter data may be already remotely collected by a telemetry system (e.g. SCADA). In those cases, the data needs to be automatically imported to the Central Database from the third party application. Vendor solutions need to have standard features to be able to support this activity.

6. ANCILLARY ON-FARM APPLICATIONS

The following items are not required but highly desirable.

6.1 The AMI System and software have the ability to support a variety of on-farm applications. Examples of on-farm applications are:

- Soil moisture monitoring
- Water-level monitoring
- Weather
- Pump Control
- Line pressure
- Valve control
- Irrigation Scheduling
- Fertigation

5.2 The User Interface shall allow the specified User to correlate consumption with meteorological data available on the User Interface.

5.3 The Central Database shall have the ability to program the AMI Module remotely.

7. WARRANTY

At a minimum, a 100% warranty on all equipment, software and labor on the AMI field hardware will be in effect during the first 24 months following commissioning and acceptance.

AMI Policy Matrix

Category	Policy Issue	Staff Recommendations
Implementation	AMI requirement Agency-wide	AMI will be required unless there is some technical infeasibility for that location.
	Redefine the type of well to require a flowmeter. Currently only active wells and some domestic wells are required to have meter. Ordinance to define meter and AMI requirements for wells.	All active Agricultural and M&I wells without SCADA or AMI. • AMI telemetry by January 31, 2019 Inactive wells of large capacity capable of producing 50 gpm or greater and M&I users classified as a *State Small Water System*. Well Owner to purchase meter and AMI equipment. • Meter & AMI by Jan 31, 2020. All small capacity wells that produce less than 50 gpm, excluding single-family residences on one acre or less with no agricultural income producing operations • Meter & AMI by January 31, 2022 All wells requiring meters within the FCGMA shall be equipped with a digital output flowmeter with calibration accuracy range not to exceed +/- 2%. • January 31, 2029
	Effective date for implementation after Ordinance adoption.	Ordinance effective 30 days after ordinance adoption with phased installation approach as above.
Equipment	Ownership, maintenance and replacement responsibility	See *AMI Ownership Evaluation* matrix
	Vendor selection approach: single vendor vs. multi-vendor approach.	Recommend single vendor approach under NRCS grant program. FCGMA to provide performance specifications for single vendor procurement through an RFQ process.
	Meter specifications: there are currently 22 different meter brands in use within the FCGMA.	Require all meters be capable of accepting AMI telemetry (smart meters) within ten years. Exception where technically infeasible with Executive Officer approval.

AMI Policy Matrix

Category	Policy Issue	Staff Recommendations
Data Management	Vendor selection for central database.	1. FCGMA to contract one vendor through RFQ process. Well Owners will have access to their data through a browser-based login. The FCGMA will have access to monthly totals except under non-compliance conditions.2. FCGMA to own data management system.3. Must be able to accept data from multiple AMI device manufactures.
	Recurring annual communication costs	FCGMA to pay for communication cost of extraction data to (1) secure volume discount pricing, (2) ensure continuous data collection, (3) avoid collection of small monies from various parties (4) use designated surcharge account after Grant funds exhausted. Well Owner/Operator responsible for other data costs beyond basic extraction data in a separate contract with the Vendor.
	New database to replace the FCGMA Online database.	This database is separate and in addition to the central database that will collect all AMI generated data. FCGMA to contract one vendor by RFQ process. This database is needed to generate billing and track extractions and allocations.
	Data confidentiality for extraction data.	Well Owner name, address, and contact information remains confidential per State regulations. Extraction data will be available to the public as a total monthly volume per basin (or aquifer) and without any identifying information such as CombCode or state well number. Well Owners will have access to user defined data generated by AMI
	Extraction data available to the FCGMA.	Monthly totals from individual Well Owners/Operators available to the FCGMA. All other data is proprietary to the Well Owner/Operator. In situations of non-compliance, the FCGMA reserves the right to obtain more granular extraction data.

AMI Policy Matrix

Category	Policy Issue	Staff Recommendations
Verification & Compliance	Meter accuracy requirements are currently +/- 5% and have remained unchanged since 1987.	Revise meter accuracy requirement to the meter industry standard of +/-2%. If one or more component is installed in the field, then the accuracy requirement is +/-5%.
	Tamper detection and alert notifications	Require tamper detection devices on flowmeter and AMI equipment. Specify action alerts to be sent to the Well Owner and FCGMA. Establish procedures to validate volumes.
	Access and inspection: define "reasonable notice" for equipment inspections	Provide Well Owners with a minimum of three days advance notice; obtain a warrant after a Well Owners declines two requests to have equipment inspected.
	Equipment inspection personnel	Agency or Agency approved vendor for all inspections.
	Penalties	Set penalties at a rate that discourages tampering, non-reporting and non-compliance.