Equipoise Consulting, Inc.

Energy Analysis

Project Management

Training

Appendices for

Evaluation of the Agricultural Pumping Efficiency Program (CPUC Project 230-02)

Submitted by:

Equipoise Consulting Incorporated

In association with

California AgQuest Consulting Inc,
Ridge & Associates, and
Vanward Consulting

June 17, 2004

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B Evaluability Assessment Plan

For this evaluation the Evaluability Assessment (EA) involved the following steps:

1. Clarifying the intended program from the perspectives of managers, staff and other key stakeholders.
2. Exploring the program reality, including the plausibility and measurability of program goals and objectives.
3. Determining the evaluation design.
4. Writing the research study approach.

Each step is detailed further below.

1. Clarify the intended program from the perspectives of managers, staff and other key stakeholders.

In this step, the objective was to clarify the assumed relationships among the program resources, program activities, and expected outcomes from the perspectives of the manager and staff. Documentation occurred of program goals and objectives, causal assumptions, and information needs and priorities of key stakeholders. This step clarified the performance indicators, or types of evidence, by which the program was assessed. This step relied on two primary sources of information. The first was program documentation, including the program's implementation plan, documents subsequently created by CIT, documents from the CPUC, and any relevant rulings from the Administration Law Judge. The second source was a meeting with the CIT managers and staff. The meeting focused on program priorities, expected program accomplishments, issues facing the program and information needs. Below is a sample of the kinds of questions that guided the interactions in the meetings:

- What is the program trying to accomplish and what resources does it have?
- What results have been produced to date?
- What accomplishments are likely in the next year?
- Why would the program produce those results?
- What are the program's main problems?
- What kinds of information do you get on the program's performance and results? What kinds of information do you need?
- How do you (how would you) use this information?
- What are your objectives for this program?
- What are the major project activities?
- Why will those activities achieve those objectives?
- Number of staff
- Total budget
- What evidence is necessary to determine whether objectives are met?
- What happens if the objectives are met? Not met?
- What data or records are maintained?
- Costs?
- Services delivered?
- Service quality?

- Outcomes?
- How often are these data collected?
- How is this information used? Does anything change based on these data or records?
- What major problems are you experiencing?
- What results have been produced to date?
- What accomplishments are likely in the next year?

On the basis of the information from these two sources (i.e. documentation and meetings), a program design model and list of currently agreed-upon program performance indicators was designed. These products documented the extent of agreement on program goals and objectives and the types of information that could be developed in terms of agreed-upon performance indicators.

A program theory model identified the resources allocated to the Program, intended program activities, expected program outcomes, and assumed causal linkages. The model focused the attention of managers and evaluators on the types of assessments that were considered useful, occurrences of expected program results that could be tracked to a performance monitoring system or management information system, and assumed causal connections that could be tested through the use of a variety of impact evaluation designs.

2. Explore program reality, including the plausibility and measurability of program goals and objectives.

In this step, the objective was to document the feasibility of measuring program performance and estimate the likelihood that the program objectives would be achieved. Evaluators too often attempt measurements and comparisons that later prove to be unrealistic or too costly. During this step, the program operations and results to date were examined to determine whether program reality was far from the program design originally envisioned.

Using existing documentation – outputs of program data systems, project reports of accomplishments, and other research and evaluation studies, comparisons were made of the intended versus the actual program resources, activities, and outcomes. Any problems inhibiting effective program performance were identified as well as measures of program performance.

3. Agree on final research approach.

In this step, all that was learned from the prior steps was taken and a final research approach was discussed and agreed upon. Decisions on what went into the final research approach focused on specific portions of the program, measuring specific variables or testing specific causal assumptions to provide information to policymakers (i.e., the CPUC) or managers to use in specific ways.

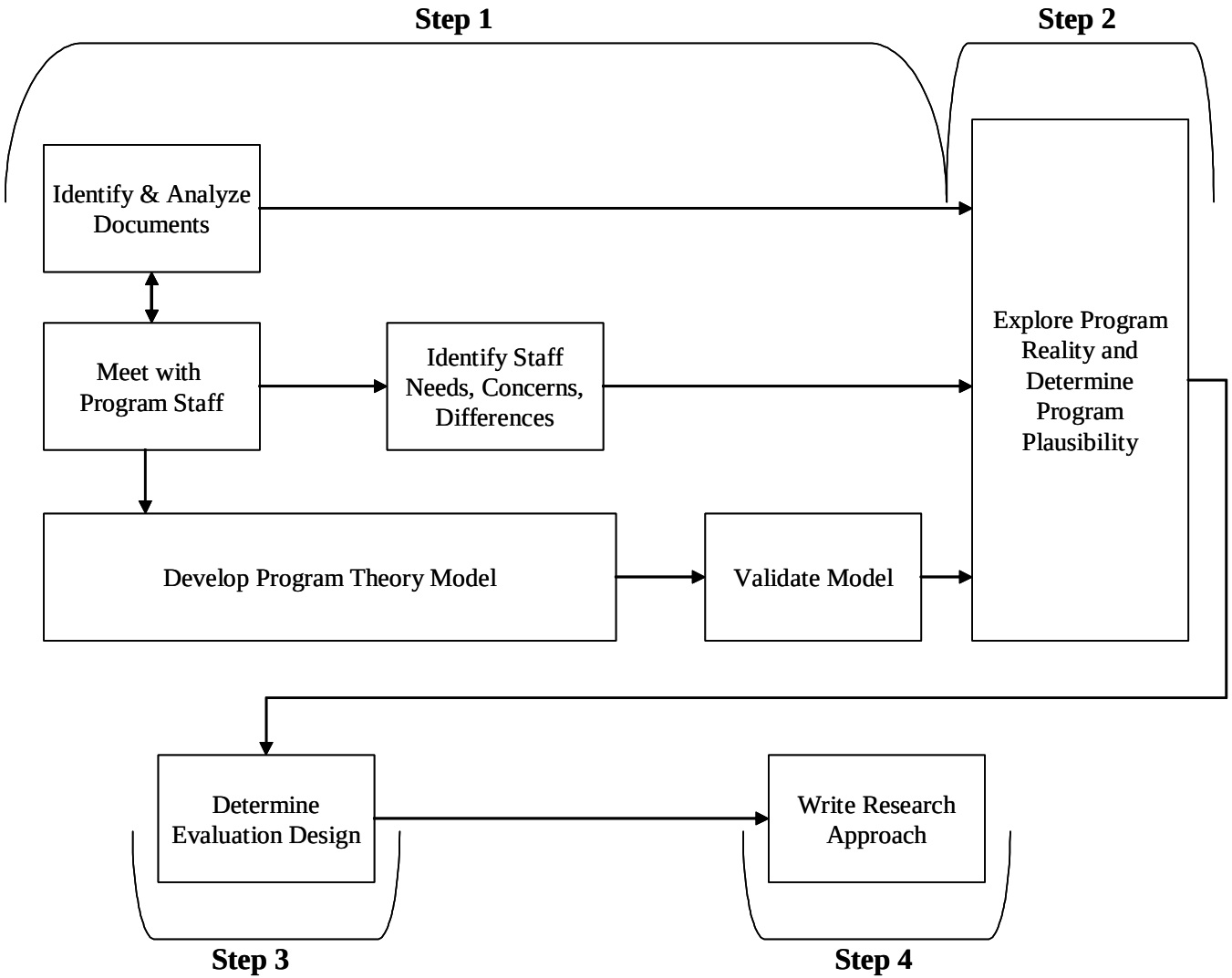
4. Write the evaluation research approach.

In this step, the areas that were to be evaluated within the program in order to most expeditiously direct the evaluation resources were written down. It was specified how the data was to be collected and the number of data points that were to be collected. Once the

population was known, samples were designed to enable statistically significant analysis of the data collected. The methodology planned for analysis was explicit and thorough.

Exhibit B.1 illustrates this process.

Exhibit B.1
Evaluability Assessment Model



These steps served as the framework for the research approach and methods for conducting the process and impact assessment of the APEP, The evaluation team followed these steps to obtain the final evaluability assessment that was detailed in a memo sent to the CIT and the CPUC-ED on 5/2/03. The contents of that memo are included next.

The initial steps of the EA of the CIT Program occurred after the Project Initiation meeting on 3/5/03. At that time, models of the implementation and program theories were discussed by the evaluation team and CIT. This discussion resulted in a number of valuable changes and additions to the program activities and linkages. The evaluation team updated the models and provided CIT with a memo outlining the changes along with a priority for data collection on 3/26/03. The updated models and priorities were discussed in a conference call on 3/31/03. The final models, along with the agreed priorities and the planned data gathering activities, are presented below.

A summary of the planned data gathering is shown in Exhibit 2.

Exhibit B.2
Summary of Planned Data Collection

Action	Type	Number	Total #
On-site Audits	Facilities	2	4
	MILs	1	
	MECs	1	
Indepth Interviews	CIT Staff (Pete)	1	95
	Pump test Companies	10	
	CIT Staff Process Qs	10	
	MEC Participants*	44	
	Seminar Participants*	30	
Telephone Surveys	Pump Test Customers	300	500
	Pump Repair Participants	100	
	Pump test customer with good financial, but no repair	100	
Other	Gathering data for analyis of ID #1		

*Estimated as the total number of participants in unknown

The action, type, and number of data points were based on the results of the evaluability assessment. Each of the links in the implementation and program models were reviewed and used to determine the course of the evaluation. In order to more precisely outline which linkages were being covered by the data collection across the implementation and program theory tables, a unique ID was provided. Exhibit B.3 through Exhibit B.6 provide the logic models and details of the linkages for the program implementation and program theory.

The evaluability assessment : 1) outlined the implementation and program theory, 2) obtained feedback from CIT on the theories, 3) agreed with CIT on which linkages will be covered in the evaluation as well as the priority of those linkages, and 4) determined the number of data points. Based on the evaluation plan, there were ten data collection instruments to be created. They were:

1. Outline of points to cover during onsite audits of the Fresno and Chico sites.

2. Mobil Irrigation Lab (MIL) Seminar Instrument
3. Outline of points to cover during interview with Pete Canessa regarding synergies of program.
4. Computer Aided Telephone Instrument (CATI) type survey instrument for pump test customers
5. CATI type survey instrument for pump repair customers
6. CATI type survey instrument for pump test customers who indicated that it would be beneficial to repair their pump, but did not do so
7. In-depth interview guide for CIT staff
8. In-depth interview guide for Pump Test Companies
9. Interview instrument for Mobile Energy Clinic (MEC) participants
10. Interview instrument for seminar participants

The evaluation team designed these instruments and submitted them to the CIT for review and comment. The final survey instruments are included in the various appendices in this report.

Exhibit B.3
Implementation Theory Logic Model

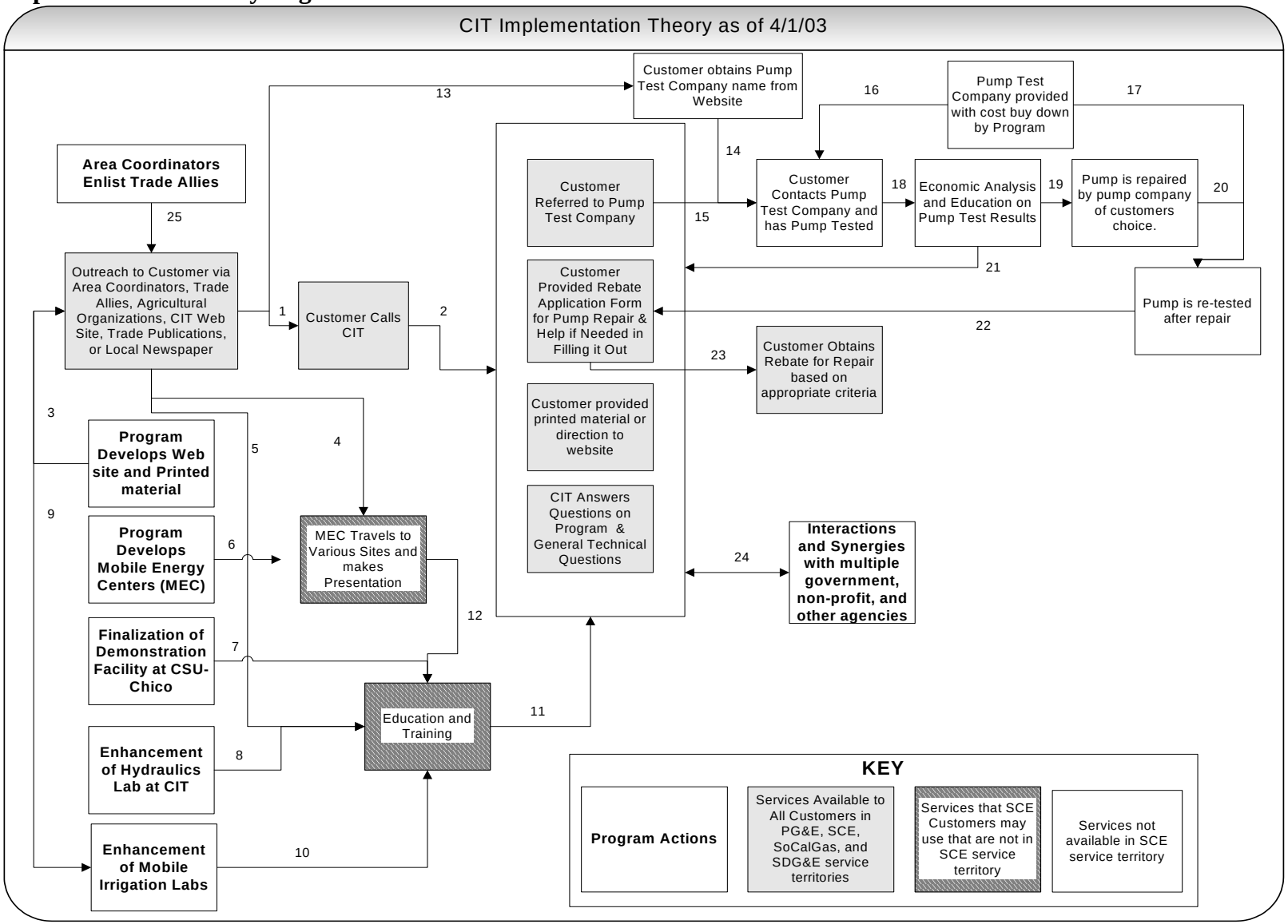


Exhibit B.4
Implementation Theory Types of Analysis and Topics of Research

				Implementation Theory
ID	**Priority**	**Linkage**	**Type of Analysis Planned**	**Specific topic of research**
1	High	1-8, 10-12, 24	Descriptive & Documentation	Specific counts along with any documentation of specified activities will occur at these linkages. This information is expected to provide the bulk of its information through appendices in the final report. Specifically, the evaluation team will provide: • Number of contacts made by the CIT based on the program database • Specifics on MEC through pictures and descriptions of the final MECs and documents handed out through MEC trips • Specific on the facility enhancements at Fresno and Chico through pictures and description of these enhancements • Information provided to Mobile Irrigation Labs (MIL) during the planned seminar for the MILs, number who attended the seminar, materials provided to the MIL from the CIT for disbursement from the MIL • Number of times the MECs meets with customers and map of where the travel occurred • How many seminars or other trainings occurred, how many attended each, and program materials provided to the participants • Number of type of contacts made by the CIT with other agencies. Specifics on where the interactions and synergies of CIT and other agencies will be documented.
2	High	16, 17	Verification	The number of pump tests with incentives will be verified through the verification process. A table will be created that indicates the number of pump tests by service utility.
3	High	23	Verification	The number of pump repairs with incentives will be verified through the verification process. A table will be created that indicates the number of pump repairs by service utility. Additionally, a map will be created of the general location

				Implementation Theory
ID	**Priority**	**Linkage**	**Type of Analysis Planned**	**Specific topic of research**
				of the pump repairs throughout the state. This may be through a GIS mapping of the business address or simply using the business city from the program database.
4	High	18	Process	The pump test customers will be queried to determine their level of interest in receiving information from the pump testers as well as what they did learn from the pump tester when the results were provided to them.
5	Medium to High	13, 14, 15	Process	Customers who have had a pump tested would be queried via the phone about the process of obtaining information on a pump test, the actual pump test, and their satisfaction with the ease of obtaining both the information and the test. Pump testers would be surveyed to assess what type of information they are providing the customer, the ease of the CIT Program process in obtaining rebates for the tested pumps. In addition, it should be noted that while not overtly included in the diagram, inherent parts of the process evaluation will include (1) interviews with program staff to assess the program implementation objectives, clarity, communication, resource allocation, and timing, and (2) an assessment of program implementation tracking completeness (including both paper and electronic systems.
6	Low	9, 19, 20, 21, 22	None	No specific research is planned to test the implementation of these links

Exhibit B.5
Program Theory Logic Model

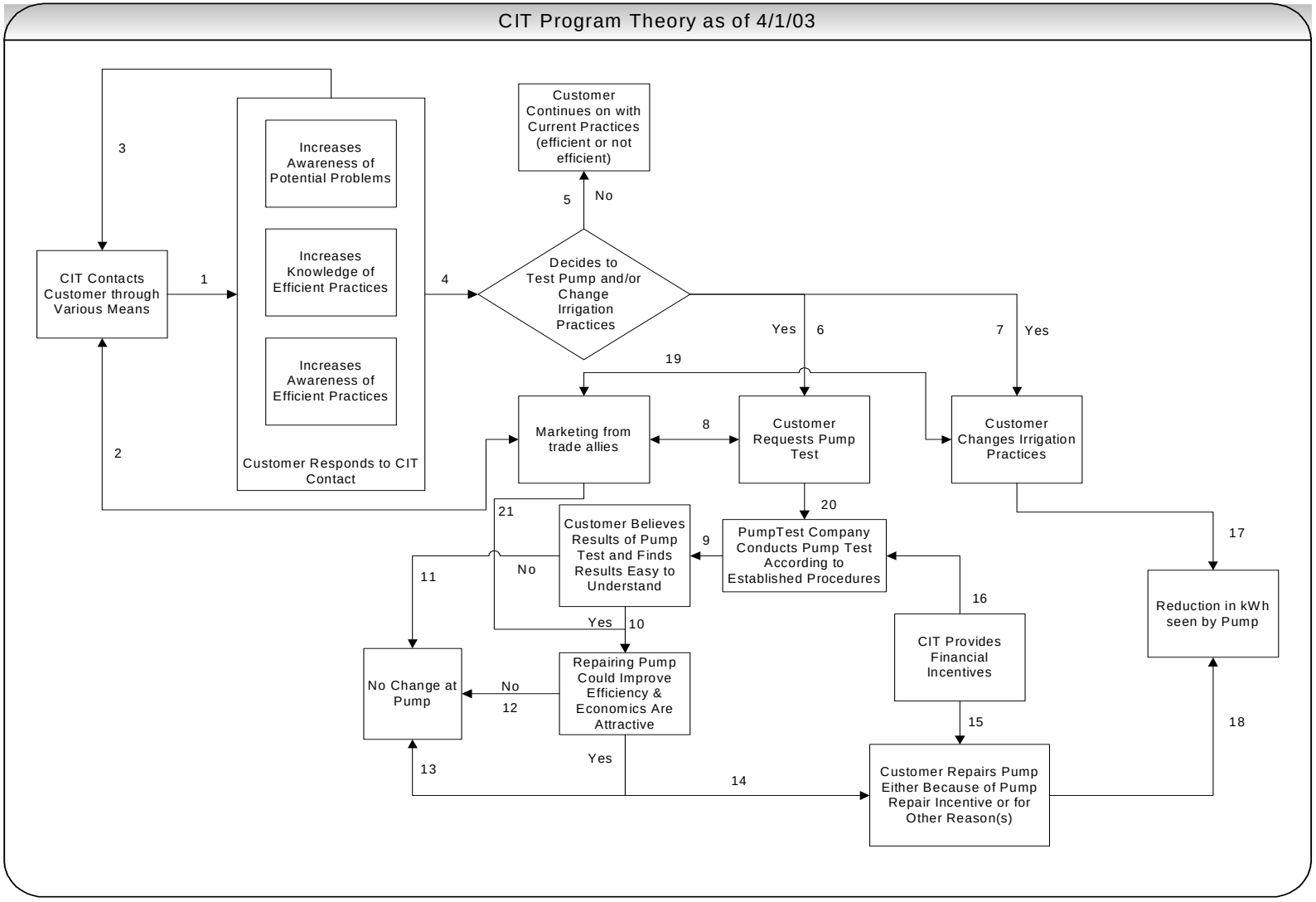


Exhibit B.6
Program Theory Types of Analysis and Topics of Research

				Program Theory
ID	**Priority**	**Linkage**	**Type of Analysis Planned**	**Specific topic of research**
7	Medium to High	CIT contacts customer through various means	Process	Information obtained through the implementation linkages will be analyzed and the data provided in a succinct format to illustrate how the specific contacts with customers are being made by the CIT.
8	High	1, 3	Impact	Participants will be queried about how (or if) the contact with the CIT Program changed their level of awareness of potential problems, knowledge of efficiency practices, and/or awareness of efficient practices. This query is currently planned of CIT contacts through the MEC, education and training, or pump repairs with those who only received a pump test a possibility for testing the awareness of potential problems.
9	High	6, 7	Impact	The impact of the program on the rate of number of pump tests or the changes in the irrigation practices through surveys of CIT contacted customers would be researched through these two links based on self-report.
10	High	21	Impact / Process	Testing this linkage will focus only on pump dealers (not pump testers because the financial incentive is enough here to cause them to market a pump test) to determine the effect of marketing from these trade allies on how many tests are performed. Both pump dealers and pump test customers would be queried on this link.
11	High	9, 10, 11	Impact / Process	Pump test customers would be queried about the results of the pump test (how easily understood, how much they believe the results, how much useful information it provides). Pump testers would be queried about the specific information provided to the customer.
12	Medium to High	13, 14	Impact	It might be of interest to the program to determine why those with positive economic analyses of the pump test results decide not to repair their pump, although it may be a difficult group for which to determine a sample frame. This link would be good to know for future program design – what would an appropriate incentive be? What return on

				investment is needed to move a pump repair up in the priority of competing investments? We will assess the influence of various factors that affect a customer's decision to repair the pump, once he has received a positive test result. We emphasize that the point of this analysis is not to determine what these participants would have done in the absence of the Program
13	High	18	Verification	This linkage represents the energy results from the pump repair. It will be researched through the verification of the pre- and post-repair pump tests along with the pump-specific energy use.
14	Low	2, 5, 8, 12, 15, 16, 17	None	No specific research is planned to test the program theory behind these linkages.

It is noted here that there is a slight difference between the memo sent on 5/2/03 and the information shown herein. Readers should note that the evaluation team had taken link 14 out of the "no research planned" area and moved it up to be included with link 13.

Besides the EA process detailed in this appendix, the CPUC had requested that changes brought about by the interactions that occurred during the EA be provided in the report. These changes are detailed next.

Program Theory logic models (both implementation and program theory models) were created by the Equipoise Team prior to the program initiation meeting based on the program implementation plan (PIP) filed with the CPUC. The Equipoise Team met with CIT team for 2.5 hours after the Project Initiation (PI) meeting to review the two draft logic models. This meeting identified the following changes to the draft models:

- Economic analysis and education as a process had not been included in the implementation logic model. CIT felt this to be a crucial element in helping customers potentially move toward a pump repair. In-depth discussions on this occurred and a box depicting this process was added to the model.
- Interactions and synergies between CIT and other government, non-profit, and other agencies were not included in the original implementation logic model. CIT felt that the program worked with these entities. A box depicting this interaction was added to the model.
- How the program performed outreach to its customers was not fully fleshed out in the implementation logic model. CIT and the Equipoise Team discussed this in detail and the outreach box was changed appropriately.
- Information on one component of the program (the Mobile Irrigation Labs, MIL) was unclear in the PIP. This component was discussed and links were updated to more accurately reflect how this component fit into the program. The Team was made aware of an upcoming seminar for the MIL group.
- This program is offered in four IOU service territories, but not all components are offered in the SCE service territory (because of the SCE Pump Test & Hydraulic Services Program). This first meeting clarified the differentiation between which specific services were available to the customers within each service territory.
- The Equipoise Team information on two components (demonstration at CSU-Chico and Hydraulics Lab at Fresno) was increased based on the EA discussion.
- These discussions clarified that the trade allies play a potentially large part in spreading the word about the CIT Agricultural Pumping Efficiency Program. A box was added to the program logic model to more accurately reflect this marketing and the links that it creates.

Based on information provided during the project initiation meeting, and this initial evaluability assessment meeting, the Equipoise Team restructured the logic models and moved the process along one more step. Next the Equipoise Team numbered the linkages and determined how each linkage would be handled within the evaluation. For each link, the type of analysis to use (i.e., impact, process, verification, descriptive/documentation, none) was determined and a specific topic of research based on that link (or set of links) was documented. The specific topic of research detailed a bit about how the data would be collected to perform the planned analysis. Lastly, the Team placed a priority on each set of links based on the our experience and the previous EA meeting. This documents was put into memo format and sent to the CIT program manager for review.

Subsequent discussion on this memo caused the following to occur:

- It was noted that the area coordinators component of the program was not appropriately indicated on the implementation plan. Another box regarding this was added to the implementation logic model.
- Link 12 was re-directed on the implementation logic model from the CIT group of items to go directly into the education box.
- The link determining the effect of the trade ally marketing was changed from medium priority and to high priority based on feedback from the program manager. While the results of the pump test were supposed to also provide economic analysis and education around the test results, anecdotal information indicated that the customers did not have time to talk with the pump testers. As this was felt to be a key component in moving customers to perform a pump repair, it was decided that this link should be a high priority.
- The link between the pump repair companies (as part of the trade ally marketing box) and their relationship to actual pump repairs, which previously had not been discussed, was added to the program theory logic model.
- The medium priority item in the program theory of determining why growers do not repair pumps when there appeared to be a financial analysis that was favorable was placed to high priority for evaluation. However, it was also discussed that some specific information around this issue (i.e. what is an appropriate incentive? What are the growers needed return on their investment) would be useful for future program design, although not currently included in the program theory.

As can be noted in the bullet points above, the evaluability assessment process resulted in evaluation of components of the program that had not initially been planned. It created a degree of collaboration and acknowledgement between the evaluation team and the program implementer about exactly what was going to come out of the evaluation report and how the data were to be collected. Also, the process allowed for a research plan that was thoroughly documented about why certain data points were to be collected and from whom the data was to be collected.

The evaluation team felt the process to be worth the resources put towards it in terms of quality of the evaluation and ability to answer the needed questions.

C CATI Survey Instruments

There were two survey instruments fielded by computer-aided telephone interview (CATI). The first survey interviewed pump test and pump repair participants from the APEP and the second interviewed pump repair participants from the CEC Agricultural Peak Load Reduction program (APLR). The survey is presented first followed by the Uses and Sources chart for that survey.

APEP SURVEY

Hello, my name is____ from Quantum Consulting**.** I am calling on behalf of the Agricultural Pumping Efficiency Program. Have I reached _____? May I speak with _____, or with the person who was responsible for overseeing pump testing or pump repairs during 2002-2003.

Our records indicate that, during 2003-2003, you or your company received a pump test or pump repair for one or more pumps. Do you remember this?

Yes 1
No..... THANK & TERMINATE
Don't know..... (-8)
Refused .....THANK & TERMINATE

APEP SURVEY

For the rest of this survey, we are going to call the Agricultural Pump Efficiency Program managed by the Center for Irrigation Technology as just "the Program".

1. How did you learn about getting your pumps tested or repaired? [Do not read; mark all that apply]

   Contacted by the Program 1
   Trade Publication 2
   Marketing by Trade Ally (pump dealer) 3
   APEP Seminar or demonstration (Mobile Education Clinic) 4
   CIT/APEP Internet Website 5
   From another grower (word of mouth) 6
   You contacted CIT/APEP by phone 7
   Through an agricultural organization 8
   Other (specify) 9
   Don't Know (**DO NOT READ**) ..... (-8)
   Refused (**DO NOT READ**) ..... (-9)

3. What is your preferred way to receive new information and ideas about pump energy efficiency?[Do not read; mark all that apply]

   Phone Call 1
   Internet or email 2
   Mail Printed Material 3
   Training Workshop 4
   Trade Association Meeting / Presentation 5
   On-site visit (in person) 6
   Other: Specify_____ 7
   Don't know (**DO NOT READ**) ..... (-8)
   Refused (**DO NOT READ**) ..... (-9)

4. How satisfied are you with the ways in which you found out about the Program? Please use a scale from 1 to 10, with 1 being not at all satisfied and 10 being very satisfied.

5. ___ Response (**number)** **-8** Don't Know **-9** Refused to Answer

APEP SURVEY

6. In 2002 and 2003, approximately how many times have you contacted the Center for Irrigation Technology about pumping efficiency? Have you been contacted....(**READ LIST**)

   Once 1
   Twice 2
   Several times, or 3
   Never 4
   Don't know (**DO NOT READ**) ..... (-8)
   Refused (**DO NOT READ**) ..... (-9)

7. Other than a pump test result, did you receive printed material from the Program such as pamphlets or pumping energy calculator?

   Yes 1
   No ..... 2 (skip to Q11)
   Don't know (**DO NOT READ**) ..... (-8) (skip to Q11)
   Refused (**DO NOT READ**) ..... (-9) (skip to Q11)

8. What did you receive?

   Pamphlet 1
   Energy Calculator 2
   Other 3
   Don't know (**DO NOT READ**) ..... (-8)
   Refused (**DO NOT READ**) ..... (-9)

9. Where or from whom did you get this printed material? [Do not read; mark all that apply]

   Sent to the business/home after requested from the Program 1
   Sent to me by vendor or contractor 2
   Picked up at a seminar / event (Mobile Education Center) 3
   APEP Program Website 4
   Other (Please Specify) _____ 5
   Don't know (**DO NOT READ**) ..... (-8)
   Refused (**DO NOT READ**) ..... (-9)

APEP SURVEY

10. I'm now going to read a series of statements regarding printed material in general. For each statement, tell me whether you disagree strongly, disagree somewhat, agree somewhat, or agree strongly.

	Disagree Strongly	Disagree Somewhat	Agree Somewhat	Agree Strongly	Don't Know	Refused
A. The information in the printed material was presented in an engaging format.						
B. The information in the printed material was easy to understand.						
C. The information in the printed material was useful.						
D. The information in the printed material was believable.						
E. The information in the printed material positively affected my attitude toward energy efficiency.						
F. I learned a considerable amount about available energy efficiency options from reading the printed material.						
G. The information in the printed material increased the likelihood that I will investigate energy efficiency options.						
H. The information printed in Spanish was useful.						

11. Did receiving Program information or talking to program staff cause you to make any changes in your irrigation practices?

    Yes 1
    No ..... 2 (GO TO Q13)
    Don't know (**DO NOT READ**) ..... (-8) (GO TO Q13)
    Refused (**DO NOT READ**) ..... (-9) (GO TO Q13)

12. What changes did you make to your irrigation practices? [Do not read; mark all that apply]

    Installed a flow meter 1
    Changed the configuration of my irrigation system 2
    Changed to a different irrigation system 3
    Other (Please Specify) _____ 4
    Don't know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

13. Were you aware that there was a website with information about this program? [

    Yes 1
    No ..... 2 (skip to Q17)
    Don't know (**DO NOT READ**) ..... (-8) (skip to Q17)
    Refused (**DO NOT READ**) ..... (-9) (skip to Q17)

14. Did you use the Program website to learn about or obtain information on getting a pump tested or making pump repairs?

    Yes 1
    No ..... 2 (skip to Q17)
    Don't know (**DO NOT READ**) ..... (-8) (skip to Q17)
    Refused (**DO NOT READ**) ..... (-9) (skip to Q17)

15. Where or from whom did you find out about the Program Website? [Do not read; mark all that apply]

    Did a web search 1
    Word of Mouth 2
    Saw it on printed program material 3
    Through an Agricultural organization or newspaper 4
    Through a vendor or contractor 5
    From the Program 6
    Other (Please Specify) _____ 7
    Don't know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

16. I'm now going to read a series of statements regarding Program Website. For each statement, tell me whether you disagree strongly, disagree somewhat, agree somewhat, or agree strongly.

	Disagree Strongly	Disagree Somewhat	Agree Somewhat	Agree Strongly	Don't Know	Refused
A. The information on the website was easy to find.						
B. The information on the website was easy to understand.						
C. The information on the website was useful.						
D. The information on the website was believable.						
E. The information on the website positively affected my attitude toward energy efficiency.						
F. I learned a considerable amount about available energy efficiency options from reading the website material.						
G. The information on the website material increased the likelihood that I will investigate energy efficiency options.						

IF FLAG FOR PUMP TEST COMPANY = 1 , Continue, else GO TO Q17I.

17. I'm now going to read a series of statements regarding the pump test and the pump test report. For each statement, tell me whether you disagree strongly, disagree somewhat, agree somewhat, or agree strongly.

	Disagree Strongly	Disagree Somewhat	Agree Somewhat	Agree Strongly	Don't Know	Refused
A. It was easy to find a Program-approved company to do a pump test.						

	Disagree Strongly	Disagree Somewhat	Agree Somewhat	Agree Strongly	Don't Know	Refused
B. It was easy to request a pump test from one of the program-approved pump test companies.						
C. Once I requested a pump test, I didn't have to wait very long to have the test performed.						
D. I didn't have to wait very long to receive the results of the pump test.						
E. The pump test results were useful.						
F. The pump test results were easy to understand.						
G. I believed the financial information in the pump test report.						
H. As a result of having my pump tested, I am now more knowledgeable about needed operating efficiency improvements for my pumping operations.						
IF PR=1,Continue, else go to Q19						
I . I used the pump test results to help decide whether to repair the pumping system.						
J. The payback was sufficient to justify a repair to my pumping system.						

APEP SURVEY

	Disagree Strongly	Disagree Somewhat	Agree Somewhat	Agree Strongly	Don't Know	Refused
K. The expected improvements in OPE from repairing the pump were verified by the post-repair pump test.						

IF FLAG FOR PUMP TEST COMPANY=1, Continue, Else Go To SP1.

19. We are particularly interested in learning more about your interactions with the person who performed your pump test when they provided you with the results of the test. Did the person who gave you the pump test results give you more or different information than you had received in the past?
    Yes 1
    No ..... 2 [GO TO Q21]
    Don't know (**DO NOT READ**) ..... (-8) [GO TO Q21]
    Refused (**DO NOT READ**) ..... (-9) [GO TO Q21]

20. What did they tell you that was more or different than what you were used to?
    Open _____
    Don't know ..... (-8)
    Refused ..... (-9)

21. Did the pump test person go over an economic analysis of your pump based on the pump test?
    Yes 1
    No 2
    Don't know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

22. The following is a series of statements about the effectiveness of the information from the pump tester. For each statement, please tell me whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree.

The information from the pump tester…	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Don't Know	Refused
A. …increased my awareness of potential problems with respect to pumping efficiency.						
B. …increased my awareness of potential solutions for these problems.						
C. ….was clearly and thoroughly gone over.						

23. Overall, what was your level of satisfaction with the pump test process? Would you say you were (read choices)
    Very satisfied ..... 1 (GO TO SP1)
    Somewhat satisfied ..... 2 (GO TO SP1)
    Somewhat dissatisfied 3
    Very dissatisfied 4
    Don't know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

24. Why were you dissatisfied?

    Open _____
    Don't Know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

SP1. IF PR=0 AND NEEDED<>0 Continue, else go to Q32

25. Our records indicate that your pump's efficiency could have been improved with a repair, but you didn't repair the pump through the program. What were the factor(s) that influenced your decision NOT to make a repair to your pumping system? (Don't read; allow multiple responses)

    Pump repair incentive was too small 1
    Payback period implied by pump test results was too long 2
    Timing did not coincide with regular maintenance on pump 3
    Reducing energy use of the pump is not a critical factor 4
    Could not take the pump offline due to growing issues 5
    Plan to repair pump in the off season 6
    The pump was repaired outside the program 7
    Did not believe the pump test results 8
    Other (Specify) 9
    Don't Know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

26.

27. Would a higher pump repair incentive have caused you to make efficiency improvements to your pumping system?

    Yes 1
    Maybe 2
    No ..... 3 [SKIP TO 31]
    Don't Know (**DO NOT READ**) ..... (-8) [SKIP TO 31]
    Refused (**DO NOT READ**) ..... (-9) [SKIP TO 31]

28.

29. Approximately what percent of your cost would the incentive have needed to cover to cause you to make the improvement?

    _____%
    Don't Know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

31. Were there any additional information or actions that the program could have provided that would have caused you to perform the pump repair?

    No 1
    Additional detail on the meaning of the pump test 2
    Better financial analysis 3
    Other (Specify) _____ 4
    Don't Know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

IF PR=1 Continue, Else go to Q36

32. What were the primary factor(s) that influenced your decision to make a repair to your pumping system? (Read list and allow multiple answers)

    Availability and amount of incentive 1
    Results of the pump test 2
    Payback implied by the pump test results 3
    Repair coincided with regular maintenance on pump 4
    Importance of reducing energy use 5
    Pump was not providing required water for crops 6
    Other (Specify) 7
    Don't Know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

34. What is your overall level of satisfaction with your pump repair experience? Are you...(read responses)

APEP SURVEY

Very satisfied ..... 1 (GO TO 36)
Somewhat satisfied ..... 2 (GO TO 36)
Somewhat dissatisfied 3
Very dissatisfied 4
Don't Know (**DO NOT READ**) ..... (-8)
Refused (**DO NOT READ**) ..... (-9)

35. Why were you dissatisfied?

Open _____
Don't Know (**DO NOT READ**) ..... (-8)
Refused (**DO NOT READ**) ..... (-9)

36. Did you participate in any of the APEP seminars or demonstrations by the Mobile Education Center?

Yes 1
No ..... 2 (GO TO Q38)
Don't Know (**DO NOT READ**) ..... (-8) (GO TO Q38)
Refused (**DO NOT READ**) ..... (-9) (GO TO Q38)

37. The following is a series of statements about the effectiveness of the presentation you attended. For each statement, please mark the appropriate box to indicate whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree.

The seminar by the APEP…	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Don't Know	Refused
A. …increased my awareness of potential problems with respect to pumping efficiency.						
B. …increased my awareness of potential solutions for these problems.						
C. …increased my knowledge of possible solutions for these problems.						

38. Prior to participating in this Program, did you know that using efficient technologies, products, system design, and services relating to your pumping system could affect your electricity bills?

Yes 1
No 2
Don't know (**DO NOT READ**) ..... (-8)
Refused (**DO NOT READ**) ..... (-9)

APEP SURVEY

39. How easy is it to get information about alternative ways of reducing energy use in pumping systems? Would you say it is: (**READ LIST**)?
    Very easy 1
    Somewhat easy 2
    Somewhat difficult, or 3
    Very difficult 4
    Don't know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

40. How willing are you to spend time looking for information on ways to reduce energy use? Would you say you are: (**READ LIST**)?
    Very willing 1
    Somewhat willing 2
    Not too willing, or 3
    Not at all willing 4
    Don't know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

41. Which of the following financial methods do you typically use to evaluate energy-efficiency improvements? (**READ LIST; CIRCLE ONE RESPONSE**)
    Simple payback 1
    Lowest initial investment 2
    A more complex financial analysis 3
    Don't know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

42. How easy would it be for you to get financing for pumping system equipment changes or energy efficient improvements? (**READ LIST**)
    Very easy 1
    Somewhat easy 2
    Somewhat difficult, or 3
    Very difficult 4
    Not applicable (**DO NOT READ**) 5
    Don't know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

43. How often have you not made necessary changes to your pumping systems due to lack of financing? (**READ LIST**)
    Often 1
    Sometimes 2
    Not too often, or 3
    Never 4

APEP SURVEY

Don't know (**DO NOT READ**) ..... (-8)
Refused (**DO NOT READ**) ..... (-9)

FIRMOGRAPHIC INFORMATION

READ: Next, I would like to ask you some general questions about your business or organization.

44. Which of the following is your largest source of revenue? (**READ ENTIRE LIST; CODE ONLY ONE THAT BEST FITS**)?

Vegetables or field crops 1
Livestock 2
Ornamental nursery 3
Indoor crops (greenhouse) 4
Packing plant 5
Vineyard/winery 6
Orchard 7
Dairy farm 8
Water district/services 9
Other? (**SPECIFY**) _____ ..10
Don't know (**DO NOT READ**) ..... (-8)
Refused (**DO NOT READ**) ..... (-9)

45. Does your business own this property?

Yes 1
No 2
Don't know (**DO NOT READ**) ..... (-8)
Refused (**DO NOT READ**) ..... (-9)

46. Would you consider your business or organization operated by a family or a company or government entity?

Family 1
Company 2
Not applicable 3
Government Entity 4
Don't know (**DO NOT READ**) ..... (-8)
Refused (**DO NOT READ**) ..... (-9)

APEP SURVEY

47. Compared to other businesses or organizations similar to yours, would you categorize this business or organization as small, medium or large?

Small.....1
Medium.....2
Large.....3
Don't know (**DO NOT READ**)..... (-8)
Refused (**DO NOT READ**)..... (-9)

48. How long has your company or organization been operating at its current location? (**READ LIST**)

1 to 3 years.....1
4 to 10 years.....2
More than 10 years.....3
Don't know (**DO NOT READ**)..... (-8)
Refused (**DO NOT READ**)..... (-9)

49. How many electric, natural gas, and diesel water pumps are used in your operation? (**NUMBER OF PUMPS**)

42A. Number of Electric Pumps....._____
42B. Number of Natural Gas Pumps....._____
42C. Number of Diesel Pumps.....
Don't know (**DO NOT READ**)..... (-8)
Refused (**DO NOT READ**)..... (-9)

50. What is your estimate of the average age of the pump(s)?

Q43YEAR Average # of years: _____ years old
Q43RANGE Range of years _____range
Don't know (**DO NOT READ**)..... (-8)
Refused (**DO NOT READ**)..... (-9)

APEP SURVEY

51. On average, how many months are the pumps used during the year? (**READ LIST**)

Less than 3 months.....1
3-6 months.....2
7-9 months.....3
10 months -Year round.....4

Don't know (**DO NOT READ**)..... (-8)
Refused (**DO NOT READ**) ..... (-9)

52. Which type of irrigation system do you use for the majority of the pumps at your site?

Drip.....1
Sprinkler.....2
Flood/Furrow 3
Other (**SPECIFY**) _____ 4
Don't know (**DO NOT READ**)..... (-8)
Refused (**DO NOT READ**) ..... (-9)

53. Approximately, what percentage of your total annual operating costs is spent in electricity bills?

Approximate % (**OR RECORD RANGE**): ..... _____%
Don't know (**DO NOT READ**)..... (-8)
Refused (**DO NOT READ**) ..... (-9)

54. How important is it for you to be sure that your pumping system makes efficient use of electricity? Is it: (**READ LIST**)?

Very important.....1
Somewhat important.....2
Not too important, or.....3
Not at all important.....4
Don't know (**DO NOT READ**)..... (-8)
Refused (**DO NOT READ**) ..... (-9)

55. Does your company have a regular schedule for testing its pumping system?

Yes.....1
No 2
Don't know (**DO NOT READ**)..... (-8)
Refused (**DO NOT READ**) ..... (-9)

56. How long has this schedule been in place?

Approximate # of years/mo.: ..... _____ years/mo.
Don't know (**DO NOT READ**)..... (-8)
Refused (**DO NOT READ**) ..... (-9)

APEP SURVEY

IF PR=1 Continue, Else Thank and End.

The Center for Irrigation Technology also manages the Agricultural Peak Load Reduction Program sponsored by the California Energy Commission (the CEC). This program provided incentives for pump repairs during an overlapping period with the Agricultural Pumping Efficiency Program.

57. Have you heard of the Agricultural Peak Load Reduction Program offered by the CEC?

    Yes 1
    No ..... 2 (Thank and End)
    Don't Know (**DO NOT READ**) ..... (-8) (THANK AND END)
    Refused (**DO NOT READ**) ..... (-9) (THANK AND END)

58. Did you hear of it before or after you had your pump repaired though the Agricultural Pump Efficiency Program?

    Before I participated in the APEP 1
    After I participated in the APEP ..... 2 (Thank and End)
    Don't Know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

59. What where your main reasons for participating in this program versus the Agricultural Peak Load Reduction Program? (Do not read; allow multiple answers)

    The peak load reduction program was out of money 1
    This program provided better incentives 2
    My pump dealer recommended this program 3
    The paperwork was easier with this program 4
    I could get the incentive faster with this program 5
    I was more familiar with the Peak Load Reduction Program 6
    Other (Specify_____) 7
    Don't Know (**DO NOT READ**) ..... (-8)
    Refused (**DO NOT READ**) ..... (-9)

THANK AND END

APEP SURVEY

Uses and Sources Chart for the Pump Test and Pump Repair Participants

CATI Survey

	Participation in:					Implementation Link								Program Theory Link											
Q	Pump Test, Good OPE	Pump Test, Low OPE	Pump Repair	Process	Impact	1	2	13	14	15	18	19	25	1	2	3	4	7	10	11	13	14	Logit	Firmographics	Additional Research
1	X	X	X	X	X	X							X	X	X										
2	X	X	X	X		X		X																	
3	X	X	X	X		X		X																	
4	X	X	X	X	X	X		X								X									
5	X	X	X	X		X	X																		
6	X	X	X	X		X	X																		
7	X	X	X	X		X	X																		
8	X	X	X	X		X	X																		
9	X	X	X		X													X							
10	X	X	X		X													X							
11	X	X	X	X		X																			
12	X	X	X	X		X	X	X																	
13	X	X	X	X		X																			
14	X	X	X	X		X																			
15	X	X	X	X	X			X	X	X	X	X							X	X	X	X			
16	X	X	Possibly	X	X						X			X											
17	X	X	Possibly	X	X						X			X											
18	X	X	Possibly	X	X						X			X											
19	X	X	Possibly	X	X						X			X											
20	X	X	Possibly	X				X	X	X	X														
21	X	X	Possibly	X				X	X	X	X														

Uses and Sources Chart for the Pump Test and Pump Repair Participants

CATI Survey

	Participation in:					Implementation Link								Program Theory Link											
Q	Pump Test, Good OPE	Pump Test, Low OPE	Pump Repair	Process	Impact	1	2	13	14	15	18	19	25	1	2	3	4	7	10	11	13	14	Logit	Firmographics	Additional Research
22		X			X															X	X				
23		X			X															X	X				
24		X			X															X	X				
25		X			X												X								
26			X		X																	X			
27			X	X								X													
28			X	X								X													
29	X	X	X		X									X											
30	X	X	X		X									X											
31	X	X	X		X																		X		
32	X	X	X		X																		X		
33	X	X	X		X																		X		
34	X	X	X		X																		X		
35	X	X	X		X																		X		
36	X	X	X		X																		X		
37	X	X	X	X	X																		X	X	
38	X	X	X	X	X																		X	X	
39	X	X	X	X	X																		X	X	
40	X	X	X	X	X																		X	X	
41	X	X	X	X	X																		X	X	
42	X	X	X	X	X																		X	X	

Uses and Sources Chart for the Pump Test and Pump Repair Participants

CATI Survey

	Participation in:					Implementation Link								Program Theory Link										
Q	Pump Test, Good OPE	Pump Test, Low OPE	Pump Repair	Process	Impact	1	2	13	14	15	18	19	25	1	2	3	4	7	10	11	13	14	Logit	Firmographics	Additional Research
43	X	X	X	X	X																		X	X	
44	X	X	X	X	X																		X	X	
45	X	X	X	X	X																		X	X	
46	X	X	X	X	X																		X	X	
47	X	X	X	X	X																		X	X	
48	X	X	X	X	X																		X	X	
49	X	X	X	X	X																		X	X	
50			X																						X
51			X																						X
52			X																						X

APLR SURVEY

Hello, my name is____**.** You recently participated in the Agricultural Peak Load Reduction program, run by the Center for Irrigation Technology. I was hoping to get a bit of your time to discuss your interactions with this program.

The Center for Irrigation Technology also manages the Agricultural Pumping Efficiency Program sponsored by the California Public Utilities Commission. This program provided incentives for pump repairs during an overlapping period with the program you participated in.

1. Have you heard of the Agricultural Pumping Efficiency Program from the CPUC?

   Yes 1
   No ..... 2 (Thank and End)
   Don't Know (**DO NOT READ**) ..... DK (-8) (THANK AND END)
   Refused (**DO NOT READ**) ..... REF (-9) (THANK AND END)

2. Did you hear of it before or after you had your pump repaired though the Agricultural Peak Load Reduction Program?

   Before I participated in the APLR 1
   After I participated in the APPLR ..... 2 (Thank and End)
   Don't Know (**DO NOT READ**) ..... DK (-8)
   Refused (**DO NOT READ**) ..... REF (-9)

3. What where your main reasons for participating in this program versus the Agricultural Pumping Efficiency Program? (Allow multiple answers – do not read responses)

   This program provided better incentives 1
   My pump dealer recommended this program 2
   The paperwork was easier with this program 3
   I could get the incentive faster with this program 4
   I was more familiar with this program 5
   Other (Specify_____) 6
   Don't Know (**DO NOT READ**) ..... DK (-8)
   Refused (**DO NOT READ**) ..... REF (-9)

BASIC KNOWLEDGE ABOUT EFFICIENCY OPTIONS

4. How easy is it to get information about alternative ways of reducing energy use in pumping systems? Would you say it is: (**READ LIST**)?

   Very easy 1
   Somewhat easy 2
   Somewhat difficult, or 3
   Very difficult 4
   Don't know (**DO NOT READ**) ..... DK (-8)
   Refused (**DO NOT READ**) ..... REF (-9)

5. How willing are you to spend time looking for information on ways to reduce energy use? Would you say you are: (**READ LIST**)?
   Very willing 1
   Somewhat willing 2
   Not too willing, or 3
   Not at all willing 4
   Don't know (**DO NOT READ**) ..... DK (-8)
   Refused (**DO NOT READ**) ..... REF (-9)

6. Which of the following financial methods do you typically use to evaluate energy-efficiency improvements? (**READ LIST; CIRCLE ONE RESPONSE**)
   Simple payback 1
   Lowest initial investment 2
   A more complex financial analysis 3
   Don't know (**DO NOT READ**) ..... DK (-8)
   Refused (**DO NOT READ**) ..... REF (-9)

7. How easy would it be for you to get financing for pumping system equipment changes or energy efficient improvements? (**READ LIST**)
   Very easy 1
   Somewhat easy 2
   Somewhat difficult, or 3
   Very difficult 4
   Not applicable (**DO NOT READ**) 5
   Don't know (**DO NOT READ**) ..... DK (-8)
   Refused (**DO NOT READ**) ..... REF (-9)

8. How often have you not made necessary changes to your pumping systems due to lack of financing? (**READ LIST**)
   Often 1
   Sometimes 2
   Not too often, or 3
   Never 4
   Don't know (**DO NOT READ**) ..... DK (-8)
   Refused (**DO NOT READ**) ..... REF (-9)

FIRMOGRAPHIC INFORMATION

READ: Next, I would like to ask you some general questions about your business or organization.

9. Which of the following is your largest source of revenue? (**READ ENTIRE LIST; CODE ONLY ONE THAT BEST FITS**)?

APLR SURVEY

Vegetables or field crops 1
Livestock 2
Ornamental nursery 3
Indoor crops (greenhouse) 4
Packing plant 5
Vineyard/winery 6
Orchard 7
Dairy farm 8
Water district/services 9
Other? (**SPECIFY**) _____ .. 10
Don't know (**DO NOT READ**) ..... DK (-8)
Refused (**DO NOT READ**) ..... REF (-9)

10. Does your business own this property?

Yes 1
No 2
Don't know (**DO NOT READ**) ..... DK (-8)
Refused (**DO NOT READ**) ..... REF (-9)

11. Would you consider your business or organization operated by a family or a company or government entity?

Family 1
Company 2
Not applicable 3
Government Entity 4
Don't know (**DO NOT READ**) ..... DK (-8)
Refused (**DO NOT READ**) ..... REF (-9)

12. Compared to other businesses or organizations similar to yours, would you categorize this business or organization as small, medium or large?

Small 1
Medium 2
Large 3
Don't know (**do not read**) ..... DK (-8)
Refused (**do not read**) ..... REF (-9)

How long has your company or organization been operating at its current location? (**READ LIST**)

APLR SURVEY

1 to 3 years 1

4 to 10 years 2

More than 10 years..... 3

Don't know (**DO NOT READ**).....DK (-8)

Refused (**DO NOT READ**) ..... REF (-9)

14. How many electric, natural gas, and diesel water pumps are used in your operation? (**NUMBER OF PUMPS**)

14A. Number of Electric Pumps ..... _____
14B. Number of Natural Gas Pumps..... _____
14C. Number of Diesel Pumps..... _____
Don't know (**DO NOT READ**).....DK (-8)
Refused (**DO NOT READ**) ..... REF (-9)

15. What is your estimate of the average age of the pump(s)?

15YEAR. Average # of years: _____ years old
15RANGE. Answer provided as a range: _____range
Don't know (**DO NOT READ**).....DK (-8)
Refused (**DO NOT READ**) ..... REF (-9)

16. On average, how many months are the pumps used during the year? (**READ LIST**)

Less than 3 months..... 1
3-6 months..... 2
7-9 months..... 3
Year round..... 4
Don't know (**DO NOT READ**).....DK (-8)
Refused (**DO NOT READ**) ..... REF (-9)

17. Which type of irrigation system do you use for the majority of the pumps at your site?

Drip..... 1
Sprinkler..... 2
Flood/Furrow 3
Other (**SPECIFY**) _____ 4
Don't know (**DO NOT READ**).....DK (-8)
Refused (**DO NOT READ**) ..... REF (-9)

APLR SURVEY

18. Approximately, what percentage of your total annual operating costs is spent in electricity bills?

Approximate % (**OR RECORD RANGE**): ..... _____%
Don't know (**DO NOT READ**).....DK (-8)
Refused (**DO NOT READ**) .....REF (-9)

19. How important is it for you to be sure that your pumping system makes efficient use of electricity? Is it: (**READ LIST**)?

Very important.....1
Somewhat important.....2
Not too important, or.....3
Not at all important.....4
Don't know (**DO NOT READ**).....DK (-8)
Refused (**DO NOT READ**) .....REF (-9)

20. Does your company have a regular schedule for testing its pumping system?

Yes.....1
No 2
Don't know (**DO NOT READ**).....DK (-8)
Refused (**DO NOT READ**) .....REF (-9)

21. How long has this schedule been in place?

Approximate # of years/mo.: ..... _____ years/mo.
Don't know (**DO NOT READ**).....DK (-8)
Refused (**DO NOT READ**) .....REF (-9)

Those are all my questions. Thank you for your time.

Uses and Sources Chart for the CEC Program Pump Repair Participants				
CATI Survey				
Q	APEP Survey Question	Additional Research	Firmographics	Logit
1		X		
2		X		
3		X		
4	32			X
5	33			X
6	34			X
7	35			X
8	36			X
9	37		X	X
10	38		X	X
11	39		X	X
12	40		X	X
13	41		X	X
14	42		X	X
15	43		X	X
16	44		X	X
17	45		X	X
18	46		X	X
19	47		X	X
20	48		X	X
21	49		X	X

D Pump Test/Pump Repair CATI Survey Frequencies & Means of Selected Questions

<PUMPCO> Pump test company in program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pump Test Co in Program	320	97.3	97.3	97.3
	Pump Test Co not in Program	9	2.7	2.7	100.0
	Total	329	100.0	100.0	

<p_repair> Pump repair completed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	300	91.2	91.2	91.2
	Yes	29	8.8	8.8	100.0
	Total	329	100.0	100.0	

Pump horsepower

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	7.5	1	3.4	3.4	3.4
	15.0	2	6.9	6.9	10.3
	20.0	1	3.4	3.4	13.8
	25.0	2	6.9	6.9	20.7
	30.0	6	20.7	20.7	41.4
	40.0	2	6.9	6.9	48.3
	50.0	4	13.8	13.8	62.1
	60.0	2	6.9	6.9	69.0
	75.0	3	10.3	10.3	79.3
	100.0	2	6.9	6.9	86.2
	125.0	2	6.9	6.9	93.1
	200.0	1	3.4	3.4	96.6
	250.0	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

Q1: How did you learn about getting your pumps tested/repaired? (Multiple Responses Possible)				
Dichotomy label	**Name**	**Count**	**Pct of Responses**	**Pct of Cases**
Q1C: Contacted by the Program	Q1C01	35	9.8	10.6
Q1C: Trade Publication	Q1C02	28	7.8	8.5
Q1C: Marketing by Trade Ally (pump dealers)	Q1C03	68	19	20.7
Q1C: APEP Seminar or demonstration (MEC)	Q1C04	5	1.4	1.5
Q1C: CIT/APEP Internet Website	Q1C05	2	0.6	0.6
Q1C: From another grower (word of mouth)	Q1C06	30	8.4	9.1
Q1C: You contacted CIT/APEP by phone	Q1C07	9	2.5	2.7
Q1C: Through an agricultural organization	Q1C08	35	9.8	10.6
Q1C: OTHER SPECIFY	Q1C77	136	38.1	41.3
Q1C: DON'T KNOW	Q1C99	9	2.5	2.7
Total responses		357	100	108.5
0 missing cases; 329 valid cases				

Q2: What is your preferred way to get new info? (Multiple Responses Possible)				
Dichotomy label	**Name**	**Count**	**Pct of Responses**	**Pct of Cases**

Q2C: Phone Call	Q2C01	11	2.7	3.3
Q2C: Internet or email	Q2C02	57	13.7	17.3
Q2C: MAIL Printed Material (USPS)	Q2C03	224	54	68.1
Q2C: Training Workshop	Q2C04	5	1.2	1.5
Q2C: Trade Association Meeting/Presentation	Q2C05	32	7.7	9.7
Q2C: On-Site Visit (in person)	Q2C06	24	5.8	7.3
Q2C: OTHER SPECIFY	Q2C77	56	13.5	17
Q2C: DON'T KNOW	Q2C99	6	1.4	1.8
Total responses		415	100	126.1
0 missing cases; 329 valid cases				

	<Q2> Other – Verbatim Responses: What is your preferred way to receive new information and ideas about pump energy efficiency?
1	Word of mouth of local farmers
2	Other growers
3	Fax, growers
4	Trade shows
5	Pump service company is the most effective, I don't see any other avenues that might serve a benefit...it would not hurt to also get info out the u of cal coop extension.... farm adviser office, a location that any growers could use
6	PGE and the pump testing guy
7	PGE used to do it for free
8	Fax
9	By fax/
10	Fax
11	Trade publication
12	Info over the fax
13	Pump co
14	Through the water dist4rict/
15	Word of mouth
16	Faxes

	<Q2> Other – Verbatim Responses: What is your preferred way to receive new information and ideas about pump energy efficiency?
17	Fax 209-394-2385. (Shared line.)
18	Radio
19	Pump supplier
20	Thru service provider
21	Or fax
22	Trade publication/ nfi
23	Fax
24	Thro fax
25	Word of mouth
26	Magazines farm services....
27	Fax
28	Media, radio, television or mail
29	Consultants give us reports and ideas
30	Through my pump dealer
31	Fax
32	Work
33	Fax
34	Fax
35	Had a big deal at stock mag expo yesterday
36	Trade mag
37	From utility
38	CIT Fresno
39	Newspapers
40	Having tests done and reviewing the test
41	Thro the water district
42	Through my dealer
43	Notification from supplier PGE rep and I work closely on conservation of energy
44	PGE
45	Farm Bureau Magazine/ Pump service Person/ nfi

	<Q2> Other – Verbatim Responses: What is your preferred way to receive new information and ideas about pump energy efficiency?
46	When the pumps run right you are getting more water and therefore it is energy efficient/ It is best for me to check myself/ and then I call the Pump service company/ nfi+
47	Irrigation store
48	Trade journals
49	I speak to my pump supplier
50	Having testing done
51	Thro the media...news bureau
52	Through our consultant
53	Ag magazines
54	Talk to my pump man personally
55	Prof publications
56	Itrc

<q3> How satisfied are you with the ways you found out about the program?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all Satisfied	2	.6	.6	.6
	2	3	.9	.9	1.6
	3	1	.3	.3	1.9
	4	2	.6	.6	2.5
	5	22	6.7	6.8	9.3
	6	8	2.4	2.5	11.8
	7	24	7.3	7.5	19.3
	8	69	21.0	21.4	40.7
	9	29	8.8	9.0	49.7
	Very Satisfied	162	49.2	50.3	100.0
	Total	322	97.9	100.0	
Missing	Don't Know	7	2.1		
Total		329	100.0		

<q4> How many times contacted in 2003 and 2004?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once	61	18.5	19.0	19.0
	Twice	42	12.8	13.1	32.1
	Several Times	59	17.9	18.4	50.5
	Never	159	48.3	49.5	100.0
	Total	321	97.6	100.0	
Missing	Don't Know	8	2.4		
Total		329	100.0		

<q5> Did you receive printed material from the Program other than the PT results?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	146	44.4	48.0	48.0
	No	158	48.0	52.0	100.0
	Total	304	92.4	100.0	
Missing	Don't Know	25	7.6		
Total		329	100.0		

Q6: What info was received besides PT results? (Multiple Responses Possible)

Dichotomy label	Name	Count	Pct of Responses	Pct of Cases
Q6C: Pamphlet	Q6C01	110	61.1	75.3
Q6C: Calculator	Q6C02	46	25.6	31.5
Q6C: Other- SPECIFY	Q6C77	16	8.9	11
Q6C: DON'T KNOW	Q6C99	8	4.4	5.5
Total responses		180	100	123.3
183 missing cases; 146 valid cases				

	<Q6> Other – Verbatim Responses: Other than a pump test result, did you receive printed material from the Program such as pamphlets or pumping energy calculator? If yes, what did you receive?
1	Ads
2	A booklet stating the efficiency of the pump and the depth of the water
3	Print outs in-depth, comprehensive reports
4	A whole pack of stuff about the program.... p...a letter, a written documentation
5	May have been other items.
6	Pump test analysis.
7	Efficiency booklet
8	Efficiency ratings
9	Cost sharing info
10	Monthly bulletin from CIT
11	A folder with various pieces of information
12	Some calculations on energy efficiency and potential changes in the pump adjustment to allow for energy efficiency
13	Pump test report
14	Estimate of replacement savings
15	Flyers
16	Brochures about the explanation of the program, the cost ...grant money available how they arrived at calculations done....
17	Forms

Q7: Where or from whom did you get extra information? (Multiple Responses Possible)				
Dichotomy label	**Name**	**Count**	**Pct of Responses**	**Pct of Cases**
Q7C: Sent to the business/home after requested	Q7C01	39	27.1	28.3
Q7C: Sent to me by vendor or contractor	Q7C02	31	21.5	22.5
Q7C: Picked up at a seminar / event (MEC)	Q7C03	12	8.3	8.7

Q7C: APEP Program Website	Q7C04	1	0.7	0.7
Q7C: Other- SPECIFY	Q7C77	46	31.9	33.3
Q7C: DON'T KNOW	Q7C99	15	10.4	10.9
Total responses		144	100	104.3
191 missing cases; 138 valid cases				

	<Q7> Other – Verbatim Responses: Other than a pump test result, did you receive printed material from the Program such as pamphlets or pumping energy calculator? If yes, where or from whom did you get this printed material?
1	Power Hydro dynamics, and county demonstrations and the water district
2	CIT
3	From Fresno State
4	Pg & e
5	The Program/
6	I picked it up at the pump co and they mailed it to me too
7	The pump tester/
8	"Dennis"? "Private business" who did the pump tests
9	Just sent out by program
10	Fresno state irrigation program, a replacement of what PG & E used to offer.
11	The people who did the testing
12	Pistachio.... pump company
13	The pump tester and PG&E/ nfi
14	Through the mail
15	Joe McKenna testing on his own used to work with PGE
16	Processed by secretary
17	From the program/ nfi
18	Program mailed it --wasn’t requested
19	They just sent it w/test results
20	Pump co
21	John Waddington from the drip-system co "Watson-Ags."

	<Q7> Other – Verbatim Responses: Other than a pump test result, did you receive printed material from the Program such as pamphlets or pumping energy calculator? If yes, where or from whom did you get this printed material?
22	Pump tester "ray Marcianno".
23	Farm bureau
24	Mobile presentation
25	Well equipment seminar
26	Sent from the program not requested
27	Came in mail dk source
28	Mailed to us from the program/ nfi
29	Out of Fresno State, CIT
30	Power company now Anderson comp.
31	From Bob
32	Person who did the pump testing
33	From pump testing people had info from Fresno
34	Company who did the testing
35	Center for irrigation, at the farm show.
36	Sent from Fresno --dk if I requested it
37	Sent to me dk who
38	Ag meeting and the Fresno County Fair/
39	From the pump tester
40	Through the pump tester
41	We went to a course or seminar that handed out the material/ I think it was CIT/ nfi.
42	APEP/
43	Through PGE consultant
44	From RCD
45	From program, --didn’t request it--got at home
46	Sent to us from program--maybe PGE?
47	Program just sent it

<q8a> The info in the material was engaging

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	1	.3	.7	.7
	Disagree Somewhat	9	2.7	6.7	7.5
	Agree Somewhat	69	21.0	51.5	59.0
	Agree Strongly	55	16.7	41.0	100.0
	Total	134	40.7	100.0	
Missing	Don't Know	4	1.2		
	System	191	58.1		
	Total	195	59.3		
Total		329	100.0		

<q8b> The info in the material was easy to understand

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	2	.6	1.5	1.5
	Disagree Somewhat	11	3.3	8.1	9.6
	Agree Somewhat	42	12.8	31.1	40.7
	Agree Strongly	80	24.3	59.3	100.0
	Total	135	41.0	100.0	
Missing	Don't Know	3	.9		
	System	191	58.1		
	Total	194	59.0		
Total		329	100.0		

<q8c> The info in the material was useful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Somewhat	7	2.1	5.1	5.1
	Agree Somewhat	44	13.4	32.4	37.5
	Agree Strongly	85	25.8	62.5	100.0
	Total	136	41.3	100.0	
Missing	Don't Know	2	.6		
	System	191	58.1		
	Total	193	58.7		
Total		329	100.0		

<q8d> The info in the material was believable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree Somewhat	35	10.6	25.9	25.9
	Agree Strongly	100	30.4	74.1	100.0
	Total	135	41.0	100.0	
Missing	Don't Know	3	.9		
	System	191	58.1		
	Total	194	59.0		
Total		329	100.0		

<q8e> The info inthe material has positively affected my attitude toward energy efficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Somewhat	5	1.5	3.8	3.8
	Agree Somewhat	54	16.4	40.9	44.7
	Agree Strongly	73	22.2	55.3	100.0
	Total	132	40.1	100.0	
Missing	Refused	1	.3		
	Don't Know	5	1.5		
	System	191	58.1		
	Total	197	59.9		
Total		329	100.0		

<q8f> I learned a considerable amount about available EE options from reading the material

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	7	2.1	5.1	5.1
	Disagree Somewhat	12	3.6	8.8	13.9
	Agree Somewhat	66	20.1	48.2	62.0
	Agree Strongly	52	15.8	38.0	100.0
	Total	137	41.6	100.0	
Missing	Don't Know	1	.3		
	System	191	58.1		
	Total	192	58.4		
Total		329	100.0		

<q8g> The info in the material increased the likelihood that I will investigate EE options.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	1	.3	.7	.7
	Disagree Somewhat	8	2.4	5.8	6.6
	Agree Somewhat	43	13.1	31.4	38.0
	Agree Strongly	85	25.8	62.0	100.0
	Total	137	41.6	100.0	
Missing	Refused	1	.3		
	System	191	58.1		
	Total	192	58.4		
Total		329	100.0		

<q8h> The info printed in Spanish was useful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	46	14.0	56.8	56.8
	Disagree Somewhat	15	4.6	18.5	75.3
	Agree Somewhat	10	3.0	12.3	87.7
	Agree Strongly	10	3.0	12.3	100.0
	Total	81	24.6	100.0	
Missing	Refused	1	.3		
	Don't Know	56	17.0		
	System	191	58.1		
	Total	248	75.4		
Total		329	100.0		

<q9> Did receiving info or talking to program staff cause you to make any changes to your irrigation practices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	86	26.1	26.4	26.4
	No	240	72.9	73.6	100.0
	Total	326	99.1	100.0	
Missing	Don't Know	3	.9		
Total		329	100.0		

Q10: What changes were made to irrigation practices? (Multiple Responses Possible)				
Dichotomy label	**Name**	**Count**	**Pct of Responses**	**Pct of Cases**
Q10C: Installed a flow meter	Q10C01	2	2.3	2.4
Q10C: Changed the configuration of my irrigation…	Q10C02	20	22.7	23.5
Q10C: Changed to a different irrigation	Q10C03	18	20.5	21.2
Q10C: Other- SPECIFY	Q10C77	48	54.5	56.5
Total responses		88	100	103.5
244 missing cases; 85 valid cases				

<Q10> Other – Verbatim Responses: What changes did you make to your irrigation practices?	
1	We irritated fewer, more frequently on our crops. The program reinforced my decision to do this.
2	Incr testing to 3x yr from 1x yr; put flow meters each well
3	More freq pump testing and watching EE ratings-nfi
4	Time of day to irrigate, instructed staff to observe pumps more frequently I have a lot of pumps
5	We are now using more of our EE Pumps when Possible

<Q10> Other – Verbatim Responses: What changes did you make to your irrigation practices?	
6	Time of use
7	Time of use meters/ nfi 77
8	I repaired the pumps so that the water would faster and then improved the economics/ nfi
9	We converted from flood to drip irrigation/ nfi
10	The application of water
11	Drip pressure changes and valves installed and length of run reduced to increase rate of flow and timing. Sprinkler system over hauled and included buster pump.
12	Increase the efficiency of the pumps
13	A more EE Booster pump/and In the process of building deep well/ nfi
14	Just quantifying it and know the output factors/ nfi
15	Cut down amount of hours
16	Made some repairs that we ordinarily have done
17	Replacing nozzles in the sprinklers to be more eff and have equal output
18	Scheduling and rashing
19	Scheduling/ nfi
20	Changed to more EE pump
21	Changed our thoughts about what we could do.
22	Hours of watering and when we watered and stuff
23	I am upgrading some of my pumps/ nfi
24	Changing the irrigation schedule and motors/
25	I made pump repairs that turned out to be cost efficient/nfi
26	We improved efficiency on some of our pumps/ nfi
27	Local pump people check the pumps to increase efficiency.
28	Started to use a different pump w/lower hp - cheaper water because using less electric c
29	Changed pumping schedules- day/night usage
30	Manage the water more efficiently. Then energy efficiency is managed better/
31	Improving our pump system by doing repairs/ nfi
32	Rebuild the pump and add the microsystem drip or sprayer.

<Q10> Other – Verbatim Responses: What changes did you make to your irrigation practices?	
33	Pump timing and sizes--p--downsized pumps to be more efficient
34	Use some pumps more than others--use the more EE ones
35	Bowls on our pumps and irrigation schedule
36	Changed the ones that were not efficient
37	New irrigation schedule/ nfi.
38	Replaced certain pump parts [bowls]
39	A changed from a booster to a pressure pump/ nfi
40	Time of use-p- installed low volume frost protection system--nfi
41	Change to off peak usage--where possible
42	Converted meters to time of use,
43	The time of application... stay in a time of use
44	Time off day use
45	Running the pumps at different times/ off peak/ on peak/ knowing how much we were pumping/ nfi
46	I changed to a more energy efficient pump / nfi
47	Changed how we use our pumps/
48	Equip maintenance schedule; electric and diesel pumps
49	Run the more effic pumps where possible

<q11> Were you aware that there was a website with info about this program?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	129	39.2	39.4	39.4
	No	198	60.2	60.6	100.0
	Total	327	99.4	100.0	
Missing	Don't Know	2	.6		
Total		329	100.0		

<q12> Did you use the website to learn about or obtain info on getting a pump test/repair?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	36	10.9	27.9	27.9
	No	93	28.3	72.1	100.0
	Total	129	39.2	100.0	
Missing	System	200	60.8		
Total		329	100.0		

Q13: Where or from whom learn about website?				
Dichotomy label	**Name**	**Count**	**Pct of Responses**	**Pct of Cases**
Web search	Q13C01	2	5.4	5.6
Word of mouth	Q13C02	4	10.8	11.1
Saw it on printed material	Q13C03	6	16.2	16.7
Through an Ag org or newspaper	Q13C04	4	10.8	11.1
Through a vendor or contractor	Q13C05	5	13.5	13.9
From the Program	Q13C06	5	13.5	13.9
Other	Q13C77	10	27	27.8
Don't Know	Q13C99	1	2.7	2.8
Total responses		37	100	102.8
293 missing cases; 36 valid cases				

	<Q13> Other – Verbatim Responses: Where or from whom did you find out about the program website?
1	Cit
2	Through the seminar by CIT/ nfi

	<Q13> Other – Verbatim Responses: Where or from whom did you find out about the program website?
3	Pg & e
4	The people who did the pump
5	Pg e
6	Fresno bee
7	My sons accountant clients
8	Pamphlet
9	Fresno State college/ nfi
10	I received an Email from the center/ nfi
11	From our pump tester
12	Neighboring irr district manager

<q14a> The info on the website was easy to find

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Somewhat	4	1.2	11.1	11.1
	Agree Somewhat	11	3.3	30.6	41.7
	Agree Strongly	19	5.8	52.8	94.4
	Don't Know	2	.6	5.6	100.0
	Total	36	10.9	100.0	
Missing	System	293	89.1		
Total		329	100.0		

<q14b> The info on the website was easy to understand

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	2	.6	5.9	5.9
	Disagree Somewhat	1	.3	2.9	8.8
	Agree Somewhat	13	4.0	38.2	47.1
	Agree Strongly	18	5.5	52.9	100.0
	Total	34	10.3	100.0	
Missing	Don't Know	2	.6		
	System	293	89.1		
	Total	295	89.7		
Total		329	100.0		

<q14c> The info on the website was useful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Somewhat	1	.3	2.9	2.9
	Agree Somewhat	15	4.6	42.9	45.7
	Agree Strongly	19	5.8	54.3	100.0
	Total	35	10.6	100.0	
Missing	Don't Know	1	.3		
	System	293	89.1		
	Total	294	89.4		
Total		329	100.0		

<q14d> The info on the website was believable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	1	.3	2.9	2.9
	Agree Somewhat	11	3.3	31.4	34.3
	Agree Strongly	23	7.0	65.7	100.0
	Total	35	10.6	100.0	
Missing	Don't Know	1	.3		
	System	293	89.1		
	Total	294	89.4		
Total		329	100.0		

<q14e> The info on the websie positively affected my attitude toward energy efficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	1	.3	2.9	2.9
	Disagree Somewhat	4	1.2	11.4	14.3
	Agree Somewhat	16	4.9	45.7	60.0
	Agree Strongly	14	4.3	40.0	100.0
	Total	35	10.6	100.0	
Missing	Don't Know	1	.3		
	System	293	89.1		
	Total	294	89.4		
Total		329	100.0		

<q14f> I learned a considerable amount about available EE options from reading the website material

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	1	.3	2.9	2.9
	Disagree Somewhat	6	1.8	17.6	20.6
	Agree Somewhat	12	3.6	35.3	55.9
	Agree Strongly	15	4.6	44.1	100.0
	Total	34	10.3	100.0	
Missing	Don't Know	2	.6		
	System	293	89.1		
	Total	295	89.7		
Total		329	100.0		

<q14g> The info on the website increased the likelihood that I will investigate EE options

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	1	.3	2.9	2.9
	Disagree Somewhat	3	.9	8.6	11.4
	Agree Somewhat	14	4.3	40.0	51.4
	Agree Strongly	17	5.2	48.6	100.0
	Total	35	10.6	100.0	
Missing	Don't Know	1	.3		
	System	293	89.1		
	Total	294	89.4		
Total		329	100.0		

<q15a> It was easy to find a program approved Co to do a pump test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	6	1.8	2.2	2.2
	Disagree Somewhat	12	3.6	4.4	6.5
	Agree Somewhat	74	22.5	26.9	33.5
	Agree Strongly	183	55.6	66.5	100.0
	Total	275	83.6	100.0	
Missing	Refused	2	.6		
	Don't Know	4	1.2		
	System	48	14.6		
	Total	54	16.4		
Total		329	100.0		

<q15b> It was easy to request a pump test from a program approved PT company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	7	2.1	2.6	2.6
	Disagree Somewhat	3	.9	1.1	3.7
	Agree Somewhat	42	12.8	15.5	19.2
	Agree Strongly	219	66.6	80.8	100.0
	Total	271	82.4	100.0	
Missing	Refused	1	.3		
	Don't Know	9	2.7		
	System	48	14.6		
	Total	58	17.6		
Total		329	100.0		

<q15c> Once I requested a pump test I didn't have to wait very long to have the test performed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	4	1.2	1.4	1.4
	Disagree Somewhat	6	1.8	2.2	3.6
	Agree Somewhat	49	14.9	17.7	21.3
	Agree Strongly	218	66.3	78.7	100.0
	Total	277	84.2	100.0	
Missing	Don't Know	4	1.2		
	System	48	14.6		
	Total	52	15.8		
Total		329	100.0		

<q15d> I didn't have to wait very long to receive the results of the pump test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	6	1.8	2.2	2.2
	Disagree Somewhat	10	3.0	3.6	5.8
	Agree Somewhat	48	14.6	17.3	23.0
	Agree Strongly	214	65.0	77.0	100.0
	Total	278	84.5	100.0	
Missing	Don't Know	3	.9		
	System	48	14.6		
	Total	51	15.5		
Total		329	100.0		

<q15e> The pump test results were useful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	3	.9	1.1	1.1
	Disagree Somewhat	5	1.5	1.8	2.9
	Agree Somewhat	40	12.2	14.4	17.3
	Agree Strongly	229	69.6	82.7	100.0
	Total	277	84.2	100.0	
Missing	Don't Know	4	1.2		
	System	48	14.6		
	Total	52	15.8		
Total		329	100.0		

<q15f> The pump test results were easy to understand

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	2	.6	.7	.7
	Disagree Somewhat	10	3.0	3.6	4.3
	Agree Somewhat	60	18.2	21.6	25.9
	Agree Strongly	206	62.6	74.1	100.0
	Total	278	84.5	100.0	
Missing	Don't Know	3	.9		
	System	48	14.6		
	Total	51	15.5		
Total		329	100.0		

<q15g> I believed the financial info in the pump test report

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	6	1.8	2.4	2.4
	Disagree Somewhat	5	1.5	2.0	4.4
	Agree Somewhat	84	25.5	33.7	38.2
	Agree Strongly	154	46.8	61.8	100.0
	Total	249	75.7	100.0	
Missing	Don't Know	32	9.7		
	System	48	14.6		
	Total	80	24.3		
Total		329	100.0		

<q15h> As a result of having my pump tested, I am now more knowledgeable about needing operating efficiency improvements for my pumping operations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	2	.6	.7	.7
	Disagree Somewhat	10	3.0	3.6	4.3
	Agree Somewhat	65	19.8	23.2	27.5
	Agree Strongly	203	61.7	72.5	100.0
	Total	280	85.1	100.0	
Missing	Don't Know	1	.3		
	System	48	14.6		
	Total	49	14.9		
Total		329	100.0		

<q15i> I used the pump test results to help decide whether to repair the system

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree Strongly	20	69.0	100.0	100.0
Missing	System	9	31.0		
Total		29	100.0		

<q15j> The payback was sufficient to justify a repair to my pumping system

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Somewhat	3	10.3	15.0	15.0
	Agree Somewhat	5	17.2	25.0	40.0
	Agree Strongly	12	41.4	60.0	100.0
	Total	20	69.0	100.0	
Missing	System	9	31.0		
Total		29	100.0		

<q15k> The expected improvements in OPE from repairing the pump were verified by the post-repair pump test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Somewhat	1	3.4	5.0	5.0
	Agree Somewhat	2	6.9	10.0	15.0
	Agree Strongly	17	58.6	85.0	100.0
	Total	20	69.0	100.0	
Missing	System	9	31.0		
Total		29	100.0		

<q16> Did the person who gave the pump test give you more or different info than you had received previously?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	121	36.8	39.7	39.7
	No	184	55.9	60.3	100.0
	Total	305	92.7	100.0	
Missing	Don't Know	15	4.6		
	System	9	2.7		
	Total	24	7.3		
Total		329	100.0		

	<Q17> Open Responses: Did the person who gave you the pump test results give you more or different information than you had received in the past? If yes, what did they tell you that was more or different than what you were used to?
1	Recovery rate was different than previously speculated. Also we learned that we could install a larger pump and still be more energy efficient than the one we were using.
2	The cost per acre foot/ how long the pump would last/ the more efficient it runs the longer it lasts/ nfi
3	I guess just like location for fert injection points, check valve, air vents.
4	Gallons per minute as well as the efficiency of our pumping system/ nfi
5	We used some combined efficiency because we had multi motor or pump situation so I had a plant efficiency that would combine both and separately and give their efficiencies separate
6	It was longer w/ more pages
7	Just about diff things to max efficiency for pumps
8	More detailed....every area
9	Pump not working replace
10	The efficiency of the pump was not up to standard and ways to make improvements/ nfi
11	He made me more information about efficiency than in the past/ nfi
12	More about the efficiency and right away to do the test...they could not do the pump test before but the program had us take care of that in such a way that we did the pump test correctly
13	He seemed more knowledgeable than most. He was very proficient and took the time to explain.
14	Never had a pump test done on the pumps so it was all new information
15	They told me that the pump was not pumping as much as the results on the previous test/
16	The efficiency of the pump and how to calculate how much water that I was getting /nfi
17	He explained how I could interpret the results that were there
18	More information in depth than former pump tests, easier to understand what was occurring.
19	He told me about pump and motor efficiency / nfi
20	More information about the pumping level limits/ nfi
21	I'd never seen one done before. He explained everything during the process.

	<Q17> Open Responses: Did the person who gave you the pump test results give you more or different information than you had received in the past? If yes, what did they tell you that was more or different than what you were used to?
22	The pump efficiency running compared to when you have a piece of paper... there was more paperwork
23	The gallons per minute were different that I had been told before/ nfi
24	Never done it before so it was a new experience for me it was awesome the guy was great
25	He had lots of info but I don't remember what it was. /nfi
26	I think that when they do the test now it's better info so now we know conditions of the pumps are changing.
27	He told me about the pressures ...I was using more pressure and water than I had to use...that I use less water than what I was using before...I was using more water before but now I am using less water and less electricity nfi
28	He said that the pump was pulsating and we needed a new one/ nfi
29	The private contractor as opposed to mail in report is much better and personal.
30	In the past well test was for financial/ educational reasons --now w/falling water table we needed to get more information on efficiency
31	The efficiency...They gave us a rating that told us whether it should be repaired or not
32	Just a little more efficiently
33	Gave more complete pump test results/information
34	Don't really-recall-showed me why pumps not operating properly -under/ over used
35	I never had a pump test done that involved so many categories so it gave me so many information...p...the overall effcy of the pumping test. The info that I was trying to obtain to find out how effic it was
36	More- he sat down w/me and went over what needed to do--p--needed to rebuild certain pumps for efficiency
37	Usually they test and say pump is bad and how to get involved in program--now gave me more information on how to fix the pumps
38	They broke it down to make it understandable--showed me how read the results nfi
39	He came and talked to me about how everything was working. In particular the pump and its components.
40	They explained to me about water pressure and how it correlates together/ nfi

	<Q17> Open Responses: Did the person who gave you the pump test results give you more or different information than you had received in the past? If yes, what did they tell you that was more or different than what you were used to?
41	They gave me the difference btw the water district and the PGE...they did water flows out in the fields...
42	More: he was explaining the procedures to me clearly rather than the past reports.
43	He just gave more information. A lot of the procedure I didn't understand. Drip system questions etc. He educated me on water flow issues.
44	Very complete analysis of the engine efficiency
45	More. Helpful and the tester were very knowledgeable and the information he presented was very useful as well.
46	Explanation of what efficiency cost savings
47	In this case they did the pump test analysis in the end: my set up was already efficient. But I did glean more information than previous test reports in trying to determine whether I needed to do more repair work to increase efficiency.
48	Actually the prior test gave me little if anything...not worth pursuing. The last test was great deal more cause the first test was lousy
49	It was basically a more accurate test. That was the main thing. Also a load balance test. His equipment was better than anyone I've used before. He used a non-intrusive flow meter. Also an energy consumption meter rather than counting the revolutions on the meter the older way. We ran 3 point tests-basically running efficiently at three different points and compare it to the different curves. If it's not verified correct then he would go back and do it again. Only get good readings. Also he keeps history, which most testers don't.
50	He demonstrated how a pump looked on the bottom and explained the functions / nfi
51	Did not have nothing before 3
52	I was told before that the pump was in need of replacing but new person indicated no such replacement was necessary
53	Well I never had a test done-basically he called me up and wanted to do test they came out and then they sent information--they didn't come out and talk directly to me afterward
54	A more definite percentage regarding the efficiency and solutions which we could go by and recommendations that we didn't have before.
55	Explained what test checked for--nfi
56	Results reflected the drop off efficiency of the old pump.

	<Q17> Open Responses: Did the person who gave you the pump test results give you more or different information than you had received in the past? If yes, what did they tell you that was more or different than what you were used to?
57	They were able to give better flow gals /min figures--more detail--easier to do the test
58	Had to do w/planned efficiency numbers--nfi
59	From Anderson: the amount of information I received here was very helpful. In the past I got nothing of use. I don't recall if it was PG&E or not. But I wouldn't go back at all. I was very satisfied with the overall program and with the technician as far as what they said and did.
60	How to read the efficiency scale and what the numbers really meant/ nfi
61	We had no past--first pump test
62	I think its just because it current...more updated
63	He explained each pumping system to us and explained the terminology as well/ nfi
64	I'd never gotten any info before
65	Gave me my gallons per minute and pump efficiency and they were ready
66	He was very thorough from top to bottom. Explained the different flows and reducing expenditures. I met up with him at a seminar as well and we're in the process of switching over our pumps to water boy w/variable speed. I felt he was more personal in his approach- not just a job.
67	Accumulative results overall were updated and explained. I was availed of pumps reaching their economic threshold and that was good.
68	More technical information…as far as the current performance of the pump and the well
69	Nothing new to me. At all I've been testing one way or another over 40 years.
70	Thorough presentation...the pump test showed efficiency better than in the past 3
71	He explained the program a lot and was very sharp. He'd been with PG&E and was a grower before. He knew about vineyards and irrigation. Also he let me know what he was doing with the testing and what was wrong with the pump. It made sense to me as well.
72	He was more knowledgeable this time around he gave me notes on which ones he was going to test and which were in need of what and when with details...
73	Just on what I could do to improve the well/ nfi
74	He helped me solve some problems I was having with a few wells. He confirmed my suspicions and it turned out to be right. Sought about the

	<Q17> Open Responses: Did the person who gave you the pump test results give you more or different information than you had received in the past? If yes, what did they tell you that was more or different than what you were used to?
	solution and replaced bowls and lowered the pumps.
75	More detail and when I asked questions he was able to answer them.
76	Was first time we where involved in program so everything different
77	The percent of efficiency, and the time of use based on rates of kilowatts used,
78	Some calculations on different ways to increase the efficiency of use and some he recommended that we change the ag 1 or ag 3, recommended changes on the amount of kilowatt hours for the pumps used
79	I think, more about the capacity of the well
80	The pump were not energy efficient/ nfi
81	He showed thoroughly operate and maintain the pumps
82	Don't remember now its been 5 months...(older fellow about 90 or so!)
83	Gave me a lot of pressure information, more on the pump I installed better than the old PGE test...breakdown of gallons per minute at each pressure setting and because of putting in new drip irrigation that was important
84	He gave me new information about falling water/ nfi
85	The procedures, and how they were conducted.
86	He explained the difference in the efficiency RATING/
87	More options on the repairs would increase efficiency/ nfi
88	How the kilowatts relate to your pump efficiency as well as horsepower and gallons per minute/ nfi
89	More detail and He talked to me general info--nfi
90	We found out what each pump and well would put
91	What the water level and gals /min were -p- drawdown; and they said my flow meter wasn’t accurate
92	Well Edison guy went over rate changes and efficiency upgrades and their effects
93	I think. Like. More info like if you improve a certain percentage, what the cost eff would be...p...more potential cost savings...more financial savings
94	The nature of the equip was a little more precise than some of the old ones we had
95	Its just more general info...p...not of the top of my head...

	<Q17> Open Responses: Did the person who gave you the pump test results give you more or different information than you had received in the past? If yes, what did they tell you that was more or different than what you were used to?
96	Total effect of how many watts and amperage I was using, gave me much more information
97	This was the first time I had the test done
98	If we needed to change pumps or efficiency of our pump system
99	It represents some more knowledge...it gave a suggesting on pump and pump levels....
100	Information was more in depth, can't recall exactly.
101	In how to run the pump and they also told me.... they have peak days and non peak days and how important to stay off the non peak times because it was too costly
102	How inefficient our pump was/ as well the volume of water that we were getting and how inefficient the pump was/ nfi
103	Gave me some more literature to read that I had not read.
104	He showed me a gage that lets me know how much water is being used as well as the water level/ and the damage/ nfi
105	Different flow rates & pressures
106	The results of the test/ nfi
107	They just gave me a better handle on what our pumps were doing, the outpour of what our pumps were putting out, the calculated water level. We found out that our water level was low and we replaced our bowl so it brought back our effcy up....
108	I've never had anything in the past. Everything he gave me was big plus...p.... he gave me a print out about the capabilities of my pump and the efficiency
109	Explained operation of pump what caused efficiency or loss of energy conservation
110	He told me the same amount of info but it was easier to find out what I wanted to do...
111	One on one in very simple layman's terms, personal explanation.
112	We learned that the Fresno State was participating/ we learned about the rebate/ we were surprised that it wasn't PGE/ nfi
113	The whole test was dff--never had a test before nfi
114	That the efficiency had degraded/ nfi
115	He sat down with me and went over the scenarios about what would happen

	<Q17> Open Responses: Did the person who gave you the pump test results give you more or different information than you had received in the past? If yes, what did they tell you that was more or different than what you were used to?
	and how much we could save.
116	That was how we found out about the program

<q18> Did the pump test person go over an economic analysis of your pump based on the pump test?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	189	57.4	62.4	62.4
	No	114	34.7	37.6	100.0
	Total	303	92.1	100.0	
Missing	Don't Know	17	5.2		
	System	9	2.7		
	Total	26	7.9		
Total		329	100.0		

<q19a> The info from the pump tester increased my AWARENESS of potential problems with respect to pumping efficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	4	1.2	1.3	1.3
	Disagree Somewhat	19	5.8	6.0	7.3
	Agree Somewhat	81	24.6	25.6	32.9
	Agree Strongly	212	64.4	67.1	100.0
	Total	316	96.0	100.0	
Missing	Refused	1	.3		
	Don't Know	3	.9		
	System	9	2.7		
	Total	13	4.0		
Total		329	100.0		

<q19b> The info from the pump tester increased my AWARENESS of potential solutions for these problems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	9	2.7	2.9	2.9
	Disagree Somewhat	26	7.9	8.3	11.2
	Agree Somewhat	102	31.0	32.6	43.8
	Agree Strongly	176	53.5	56.2	100.0
	Total	313	95.1	100.0	
Missing	Refused	1	.3		
	Don't Know	6	1.8		
	System	9	2.7		
	Total	16	4.9		
Total		329	100.0		

<q19c> The info from the pump tester was clearly and thoroughly gone over

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Strongly	12	3.6	3.9	3.9
	Disagree Somewhat	24	7.3	7.7	11.6
	Agree Somewhat	72	21.9	23.2	34.7
	Agree Strongly	203	61.7	65.3	100.0
	Total	311	94.5	100.0	
Missing	Refused	1	.3		
	Don't Know	8	2.4		
	System	9	2.7		
	Total	18	5.5		
Total		329	100.0		

<q20> What was your overall level of satisfaction with the PT process

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	.3	.3	.3
	Somewhat Dissatisfied	4	1.2	1.3	1.6
	Somewhat Satisfied	67	20.4	21.1	22.6
	Very Satisfied	246	74.8	77.4	100.0
	Total	318	96.7	100.0	
Missing	Don't Know	2	.6		
	System	9	2.7		
	Total	11	3.3		
Total		329	100.0		

	<Q21> Open Responses: Why were you dissatisfied with the pump test process?
1	Just need more info and further dialogue
2	The follow up needed to be done in person and explained --rather than just getting paperwork back
3	Because they were pushing right away before I could get the grapes for Harvest I didn't want to turn water on but they were pushy.
4	I have not been able to get a follow up...we tested and put in a new pump and can't get a follow-up...pump check is the name of the place
5	The tester didn’t get the water level correct and I lost about 5000 dollars (Valley Pump in Tulare/ nfi

Q22: What factors caused you NOT to make a repair? (Multiple Responses Possible)				
Dichotomy label	**Name**	**Count**	**Pct of Responses**	**Pct of Cases**
Q22C: Pump repair incentive was too small	Q22C01	17	7.9	8.9
Q22C: Payback period implied by pump test	Q22C02	3	1.4	1.6
Q22C: Timing did not coincide with regular…	Q22C03	11	5.1	5.7
Q22C: Reducing energy use of the pump is…	Q22C04	2	0.9	1
Q22C: Could not take the pump offline during…	Q22C05	15	7	7.8
Q22C: Plan to repair pump in the off-season…	Q22C06	31	14.4	16.1
Q22C: The pump was repaired outside the program	Q22C07	16	7.4	8.3
Q22C: Did not believe the pump test results	Q22C08	4	1.9	2.1
Q22C: RECORD VERBATIM	Q22C77	111	51.6	57.8
Q22C: DON'T KNOW	Q22C99	5	2.3	2.6
Total responses		215	100	112
108 missing cases; 192 valid cases				

<q23> Would a higher pump repair incentive have caused you to make efficiency improvements to your pumping system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	105	31.9	59.7	59.7
	Maybe	44	13.4	25.0	84.7
	No	27	8.2	15.3	100.0
	Total	176	53.5	100.0	
Missing	Refused	1	.3		
	Don't Know	15	4.6		
	System	137	41.6		
	Total	153	46.5		
Total		329	100.0		

<Q24> Approximately what percent of your cost would the incentive have needed to cover to cause you to make the improvement? 888 IS REFUSED 999 is DON'T KNOW

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10	2	.7	1.5	1.5
	15	1	.3	.8	2.3
	20	2	.7	1.5	3.8
	25	11	3.7	8.5	12.3
	30	5	1.7	3.8	16.2
	35	2	.7	1.5	17.7
	40	4	1.3	3.1	20.8
	45	1	.3	.8	21.5
	50	51	17.0	39.2	60.8
	60	9	3.0	6.9	67.7
	65	3	1.0	2.3	70.0
	67	1	.3	.8	70.8
	70	2	.7	1.5	72.3
	75	12	4.0	9.2	81.5
	80	7	2.3	5.4	86.9
	85	1	.3	.8	87.7
	90	1	.3	.8	88.5
	100	15	5.0	11.5	100.0
	Total	130	43.3	100.0	
Missing	888	1	.3		
	999	18	6.0		
	System	151	50.3		
	Total	170	56.7		
Total		300	100.0		

Q25: What additional steps could have been taken by the Program? (Multiple Responses Possible)				
Dichotomy label	**Name**	**Count**	**Pct of Responses**	**Pct of Cases**
Q25C: None	Q25C01	129	65.2	67.2

Q25C: Additional detail on the meaning o	Q25C02	6	3	3.1
Q25C: Better financial analysis	Q25C03	10	5.1	5.2
Q25C: RECORD VERBATIM	Q25C77	36	18.2	18.8
Q25C: REFUSED	Q25C88	1	0.5	0.5
Q25C: DON'T KNOW	Q25C99	16	8.1	8.3
Total responses		198	100	103.1
108 missing cases; 192 valid cases				

Q26: Primary reason why repaired pump? (Multiple Responses Possible)				
Dichotomy label	**Name**	**Count**	**Pct of Responses**	**Pct of Cases**
Availability/amount of incentive	Q26C01	13	13	44.8
Results of the pump test	Q26C02	20	20	69
Payback implied by the pump test results	Q26C03	15	15	51.7
Repair coincided with regular maintenance	Q26C04	5	5	17.2
Importance of reducing energy use	Q26C05	16	16	55.2
Pump was not providing required water for…	Q26C06	19	19	65.5
Other	Q26C77	12	12	41.4
Total Responses		100	100	344.8
300 missing cases; 29 valid cases				

	<Q26> Other – Verbatim Responses: What were the primary factor(s) that influenced your decision to make a repair to your pumping system?
1	I had made the decision to test the pumps before I attended the seminar, it just confirmed my decision.
2	We were afraid there was a break and wanted to prevent further damage.

	<Q26> Other – Verbatim Responses: What were the primary factor(s) that influenced your decision to make a repair to your pumping system?
3	Test results showed power decrease --p--economic
4	It was time for a repair
5	Very old age pumps
6	To incr efficiency--p--get money back rebate
7	Lack of efficiency--p--save energy
8	I was changing crops from vineyard to orchard and needed more water
9	We are doing more area with less energy
10	To get higher eff--it was an old field--p-- less money utility costs
11	Eff was down-p-hearing noises from pump nfi
12	Incr pump efficiency

<q27> What is your overall level of satisfaction with your pump repair experience?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	2	.6	6.9	6.9
	Somewhat Satisfied	5	1.5	17.2	24.1
	Very Satisfied	22	6.7	75.9	100.0
	Total	29	8.8	100.0	
Missing	System	300	91.2		
Total		329	100.0		

	<Q28> Open Responses: Why were you dissatisfied with your overall pump repair experience?
1	It didn't meet my expectations as far as the amount of the pump output that I was expecting.
2	Had to do with the water table being drawn down/ nfi

<q29> Did you participate in any of the APEP seminars or demonstrations by the mobile education center?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	26	7.9	7.9	7.9
	No	303	92.1	92.1	100.0
	Total	329	100.0	100.0	

<q30a> The seminar by the APEP increased my AWARENESS of potential problems with respect to pumping efficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree Somewhat	5	1.5	19.2	19.2
	Agree Strongly	21	6.4	80.8	100.0
	Total	26	7.9	100.0	
Missing	System	303	92.1		
Total		329	100.0		

<q30b> The seminar increased my AWARENESS of potential solutions to these problems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Somewhat	2	.6	7.7	7.7
	Agree Somewhat	4	1.2	15.4	23.1
	Agree Strongly	20	6.1	76.9	100.0
	Total	26	7.9	100.0	
Missing	System	303	92.1		
Total		329	100.0		

<q30c> The seminar increased my KNOWLEDGE of possible solutions to these problems.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree Somewhat	1	.3	3.8	3.8
	Agree Somewhat	5	1.5	19.2	23.1
	Agree Strongly	20	6.1	76.9	100.0
	Total	26	7.9	100.0	
Missing	System	303	92.1		
Total		329	100.0		

<q31> Prior to participating in this program, did you know that using efficient technologies, etc. relating to your pumping syst could affect your electricity bills?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	284	86.3	86.3	86.3
	No	45	13.7	13.7	100.0
	Total	329	100.0	100.0	

<q32> How easy is it to get info about alternative ways of reducing energy use in pumping systems?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all Easy	19	5.8	5.9	5.9
	Not too Easy	73	22.2	22.7	28.7
	Somewhat Easy	175	53.2	54.5	83.2
	Very easy	54	16.4	16.8	100.0
	Total	321	97.6	100.0	
Missing	Don't Know	8	2.4		
Total		329	100.0		

<q33> How willing are you to spend time looking for info on ways to reduce energy use?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all Willing	3	.9	.9	.9
	Not too Willing	18	5.5	5.5	6.4
	Somewhat Willing	173	52.6	52.6	59.0
	Very willing	135	41.0	41.0	100.0
	Total	329	100.0	100.0	

<q34> Which of the following financial methods do you typically use to evaluate EE improvements?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Simple Payback	183	55.6	57.4	57.4
	Lowest Initial Investment	61	18.5	19.1	76.5
	A more complex financial analysis	75	22.8	23.5	100.0
	Total	319	97.0	100.0	
Missing	Refused	1	.3		
	Don't Know	9	2.7		
	Total	10	3.0		
Total		329	100.0		

<q35> How easy would it be for you to get financing for pumping system equipment changes or EE improvements?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all Easy	21	6.4	6.8	6.8
	Not too Easy	70	21.3	22.5	29.3
	Somewhat Easy	127	38.6	40.8	70.1
	Very easy	93	28.3	29.9	100.0
	Total	311	94.5	100.0	
Missing	-99	7	2.1		
	Don't Know	11	3.3		
	Total	18	5.5		
Total		329	100.0		

<q36> How often have you NOT made necessary changes to your pumping system due to lack of financing?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Often	40	12.2	12.4	12.4
	Sometimes	73	22.2	22.7	35.1
	Not too often	89	27.1	27.6	62.7
	Never	120	36.5	37.3	100.0
	Total	322	97.9	100.0	
Missing	Don't Know	7	2.1		
Total		329	100.0		

<q37> Which of the following is your largest source of revenue?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Vegetables/Field Crops	86	26.1	26.3	26.3
	Livestock	18	5.5	5.5	31.8
	Ornamental Nursery	3	.9	.9	32.7
	Indoor Crops (Greenhouse)	1	.3	.3	33.0
	Packing Plant	4	1.2	1.2	34.3
	Vineyard/Winery	78	23.7	23.9	58.1
	Orchard	96	29.2	29.4	87.5
	Dairy Farm	18	5.5	5.5	93.0
	Water District/Services	12	3.6	3.7	96.6
	Other	11	3.3	3.4	100.0
	Total	327	99.4	100.0	
Missing	Refused	2	.6		
Total		329	100.0		

	<Q37> Other – Verbatim Responses: Which of the following is your largest source of revenue?
1	Construction or land development
2	Walnut Trees/and rice
3	Nursery /
4	Vineyard/raisin
5	Vineyard/orchard -50/50
6	Water drainage

	<Q37> Other – Verbatim Responses: Which of the following is your largest source of revenue?
7	Grain
8	Non profit org. Donations
9	Reclamation district for the state of California
10	Wine grapes
11	Oranges

<q38> Does your business own this property?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	283	86.0	86.3	86.3
	No	45	13.7	13.7	100.0
	Total	328	99.7	100.0	
Missing	Refused	1	.3		
Total		329	100.0		

<q39> Would you consider your business owned by a .....

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Family	275	83.6	83.8	83.8
	Company	38	11.6	11.6	95.4
	Not Applicable	1	.3	.3	95.7
	Government Entity	14	4.3	4.3	100.0
	Total	328	99.7	100.0	
Missing	Don't Know	1	.3		
Total		329	100.0		

<q40> Compared to other similar businesses or orgs, is your business small, med, or large?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Small	140	42.6	42.8	42.8
	Medium	130	39.5	39.8	82.6
	Large	57	17.3	17.4	100.0
	Total	327	99.4	100.0	
Missing	Don't Know	2	.6		
Total		329	100.0		

<q41> How long operating at the current location?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 to 3 Yrs	13	4.0	4.0	4.0
	4 to 10 Yrs	35	10.6	10.7	14.6
	More than 10 Yrs	280	85.1	85.4	100.0
	Total	328	99.7	100.0	
Missing	Refused	1	.3		
Total		329	100.0		

<q42a> How many electric pumps are used in your operation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5	1.5	1.5	1.5
	1	40	12.2	12.2	13.8
	2	37	11.2	11.3	25.1
	3	29	8.8	8.9	33.9
	4	20	6.1	6.1	40.1
	5	20	6.1	6.1	46.2
	6	18	5.5	5.5	51.7
	7	9	2.7	2.8	54.4
	8	14	4.3	4.3	58.7
	9	7	2.1	2.1	60.9
	10	17	5.2	5.2	66.1
	11	7	2.1	2.1	68.2
	12	12	3.6	3.7	71.9
	13	5	1.5	1.5	73.4
	14	4	1.2	1.2	74.6
	15	9	2.7	2.8	77.4
	16	2	.6	.6	78.0
	18	2	.6	.6	78.6
	19	2	.6	.6	79.2
	20	9	2.7	2.8	82.0
	21	1	.3	.3	82.3
	22	1	.3	.3	82.6
	24	1	.3	.3	82.9
	25	10	3.0	3.1	85.9
	26	2	.6	.6	86.5
	27	2	.6	.6	87.2
	28	2	.6	.6	87.8
	30	13	4.0	4.0	91.7
	32	1	.3	.3	92.0
	33	1	.3	.3	92.4
	35	3	.9	.9	93.3
	36	1	.3	.3	93.6
	38	1	.3	.3	93.9
	40	5	1.5	1.5	95.4
	45	3	.9	.9	96.3
	48	1	.3	.3	96.6
	49	1	.3	.3	96.9
	50	5	1.5	1.5	98.5
	62	1	.3	.3	98.8
	70	2	.6	.6	99.4
	125	1	.3	.3	99.7
	225	1	.3	.3	100.0
	Total	327	99.4	100.0	
Missing	99999	2	.6		
Total		329	100.0		

<q42b> How many natural gas pumps are used in your operation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	298	90.6	91.7	91.7
	1	8	2.4	2.5	94.2
	2	5	1.5	1.5	95.7
	3	3	.9	.9	96.6
	4	3	.9	.9	97.5
	5	1	.3	.3	97.8
	6	1	.3	.3	98.2
	9	1	.3	.3	98.5
	10	1	.3	.3	98.8
	12	1	.3	.3	99.1
	16	1	.3	.3	99.4
	17	1	.3	.3	99.7
	260	1	.3	.3	100.0
	Total	325	98.8	100.0	
Missing	99999	4	1.2		
Total		329	100.0		

<q42c> How many diesel pumps are used in your operation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	214	65.0	65.4	65.4
	1	41	12.5	12.5	78.0
	2	25	7.6	7.6	85.6
	3	10	3.0	3.1	88.7
	4	8	2.4	2.4	91.1
	5	6	1.8	1.8	93.0
	6	3	.9	.9	93.9
	7	5	1.5	1.5	95.4
	8	4	1.2	1.2	96.6
	9	1	.3	.3	96.9
	10	1	.3	.3	97.2
	12	2	.6	.6	97.9
	13	1	.3	.3	98.2
	15	1	.3	.3	98.5
	17	1	.3	.3	98.8
	18	1	.3	.3	99.1
	21	1	.3	.3	99.4
	30	1	.3	.3	99.7
	160	1	.3	.3	100.0
	Total	327	99.4	100.0	
Missing	99999	2	.6		
Total		329	100.0		

Q43: What is your estimate of the average of your pumps? (Years or the midpoint of the value given in q43range)

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	1	2	0.6	0.6	0.6
	2	5	1.5	1.6	2.2
	3	2	0.6	0.6	2.8
	4	4	1.2	1.3	4.1
	5	5	1.5	1.6	5.7
	6	6	1.8	1.9	7.6
	7	12	3.6	3.8	11.4

Q43: What is your estimate of the average of your pumps? (Years or the midpoint of the value given in q43range)					
Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	8	12	3.6	3.8	15.2
	9	7	2.1	2.2	17.4
	10	31	9.4	9.8	27.2
	11	13	4.0	4.1	31.3
	12	13	4.0	4.1	35.4
	13	7	2.1	2.2	37.7
	14	6	1.8	1.9	39.6
	15	35	10.6	11.1	50.6
	16	3	0.9	0.9	51.6
	17	2	0.6	0.6	52.2
	18	10	3.0	3.2	55.4
	19	1	0.3	0.3	55.7
	20	38	11.6	12.0	67.7
	21	10	3.0	3.2	70.9
	22	1	0.3	0.3	71.2
	23	1	0.3	0.3	71.5
	24	1	0.3	0.3	71.8
	25	20	6.1	6.3	78.2
	26	4	1.2	1.3	79.4
	28	5	1.5	1.6	81.0
	29	1	0.3	0.3	81.3
	30	23	7.0	7.3	88.6
	33	1	0.3	0.3	88.9
	34	1	0.3	0.3	89.2
	35	7	2.1	2.2	91.5
	36	1	0.3	0.3	91.8
	38	1	0.3	0.3	92.1

Q43: What is your estimate of the average of your pumps? (Years or the midpoint of the value given in q43range)					
Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	40	11	3.3	3.5	95.6
	45	4	1.2	1.3	96.8
	50	6	1.8	1.9	98.7
	54	1	0.3	0.3	99.1
	60	1	0.3	0.3	99.4
	65	1	0.3	0.3	99.7
	70	1	0.3	0.3	100.0
	Total	316	96.0	100.0	
Missing	System	13	4		
	Total	329	100		

<q44> On average, how many months are the pumps used during the year?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 3	19	5.8	5.8	5.8
	3 to 6 mo's	136	41.3	41.7	47.5
	7 to 9 mo's	120	36.5	36.8	84.4
	10 mo to year round	51	15.5	15.6	100.0
	Total	326	99.1	100.0	
Missing	Refused	2	.6		
	Don't Know	1	.3		
	Total	3	.9		
Total		329	100.0		

<q45> Which type of irrigation system do you use for the majority of the pumps at your site?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Drip	88	26.7	26.9	26.9
	Sprinkler	90	27.4	27.5	54.4
	Flood/Furrow	115	35.0	35.2	89.6
	Other	34	10.3	10.4	100.0
	Total	327	99.4	100.0	
Missing	Refused	1	.3		
	Don't Know	1	.3		
	Total	2	.6		
Total		329	100.0		

	<Q45> Other – Verbatim Responses: Which type of irrigation system do you use for the majority of the pumps at your site?
1	Drip and sprinkler
2	Combo of drip and sprinkler
3	50/50, drip/sprinkler
4	Sprinkler and flood/ nfi
5	Drip and sprinkler/ nfi
6	Evenly split between all three
7	50/50 sprinkler / flood
8	Cement and Plastic pipeline/ nfi
9	Drip and furrow/
10	Combo of sprinkler and flood.
11	All three/
12	Fan jet system
13	Combo drip and sprinkler
14	Micro sprinkler
15	Flood, micro sprinkler, drip and solid set/ nfi
16	Micro jet/
17	Drip, sprinkler and furrow/ nfi
18	Drip and sprinkler/ nfi
19	Micro sprinkling.... new technology...

	<Q45> Other – Verbatim Responses: Which type of irrigation system do you use for the majority of the pumps at your site?
20	Don’t irrigate
21	50% drip and 50% sprinkler
22	Micro sprinkler/
23	Combo sprinkler flood
24	Drip and sprinkler
25	We are unique we pump mostly discharging water--use sprinklers for most rest of irrigation
26	We rent it out.... drip mainly
27	Half drip and half sprinkler orchards are sprinklers and vegetables are underground drip
28	All three--equally --we have vineyard, orchards and crops
29	Drip/sprinkler-50/50
30	We are in process installing drip system from furrow system
31	Misters and micro jets
32	We deliver to irrigators who utilize flood and Furrow/ nfi
33	It was flood/furrow but its going to be drip
34	Drip/ sprinkler- 50/50

<q46> Approximately what percentage of your total annual operating costs is spent in ELECTRICITY bills?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	.3	.4	.4
	1	9	2.7	3.7	4.1
	2	10	3.0	4.1	8.1
	3	8	2.4	3.3	11.4
	4	11	3.3	4.5	15.9
	5	42	12.8	17.1	32.9
	6	4	1.2	1.6	34.6
	7	1	.3	.4	35.0
	8	7	2.1	2.8	37.8
	9	1	.3	.4	38.2
	10	53	16.1	21.5	59.8
	12	4	1.2	1.6	61.4
	15	20	6.1	8.1	69.5
	16	1	.3	.4	69.9
	18	2	.6	.8	70.7
	20	25	7.6	10.2	80.9
	23	1	.3	.4	81.3
	24	1	.3	.4	81.7
	25	13	4.0	5.3	87.0
	28	1	.3	.4	87.4
	29	1	.3	.4	87.8
	30	7	2.1	2.8	90.7
	33	2	.6	.8	91.5
	35	6	1.8	2.4	93.9
	40	8	2.4	3.3	97.2
	45	1	.3	.4	97.6
	50	6	1.8	2.4	100.0
	Total	246	74.8	100.0	
Missing	-99	12	3.6		
	88	2	.6		
	99	69	21.0		
	Total	83	25.2		
Total		329	100.0		

<q47> How important is it for you to be sure that your pumping system makes efficient use of electricity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all important	1	.3	.3	.3
	Not too Important	7	2.1	2.2	2.5
	Somewhat Important	75	22.8	23.3	25.8
	Very Important	239	72.6	74.2	100.0
	Total	322	97.9	100.0	
Missing	-99	5	1.5		
	Refused	1	.3		
	Don't Know	1	.3		
	Total	7	2.1		
Total		329	100.0		

<q48> Does your company have a regular schedule for testing its pumping system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	111	33.7	33.7	33.7
	No	218	66.3	66.3	100.0
	Total	329	100.0	100.0	

<Q49: time> time (in years) schedule has been in place

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.25	2	.6	1.8	1.8
	.50	2	.6	1.8	3.6
	.75	1	.3	.9	4.5
	1.00	6	1.8	5.4	9.9
	1.50	2	.6	1.8	11.7
	2.00	13	4.0	11.7	23.4
	2.25	1	.3	.9	24.3
	2.50	1	.3	.9	25.2
	3.00	5	1.5	4.5	29.7
	4.00	6	1.8	5.4	35.1
	5.00	7	2.1	6.3	41.4
	6.00	3	.9	2.7	44.1
	7.00	2	.6	1.8	45.9
	8.00	3	.9	2.7	48.6
	9.00	2	.6	1.8	50.5
	10.00	14	4.3	12.6	63.1
	12.00	8	2.4	7.2	70.3
	13.00	1	.3	.9	71.2
	15.00	9	2.7	8.1	79.3
	16.00	1	.3	.9	80.2
	17.00	1	.3	.9	81.1
	20.00	11	3.3	9.9	91.0
	25.00	3	.9	2.7	93.7
	30.00	4	1.2	3.6	97.3
	34.00	1	.3	.9	98.2
	40.00	1	.3	.9	99.1
	50.00	1	.3	.9	100.0
	Total	111	33.7	100.0	
Missing	System	218	66.3		
Total		329	100.0		

<q50> Have you heard of the APLR Program offered by the CEC?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	4.3	50.0	50.0
	No	14	4.3	50.0	100.0
	Total	28	8.5	100.0	
Missing	Don't Know	1	.3		
	System	300	91.2		
	Total	301	91.5		
Total		329	100.0		

<q51> Did you hear of it before or after you had your pump repaired through the APEP?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Before	11	3.3	84.6	84.6
	After	2	.6	15.4	100.0
	Total	13	4.0	100.0	
Missing	Don't Know	1	.3		
	System	315	95.7		
	Total	316	96.0		
Total		329	100.0		

Q52: Reason for participating in APEP vs. APLR? (Multiple Responses Possible)

Dichotomy label	Name	Count	Pct of Responses	Pct of Cases
APEP provided better incentives	Q52C02	1	8.3	9.1
Pump dealer recommended this program	Q52C03	1	8.3	9.1
Other	Q52C77	6	50	54.5
Don’t Know	Q52C99	4	33.3	36.4
Total responses		12	100	109.1
318 missing cases; 11 valid cases				

<Q52> Other – Verbatim Responses: What where your main reasons for participating in this program versus the Agricultural Peak Load Reduction Program?
Reduction in cost/ nfi
The way program works we don't qualify--we always run on peak hrs--didn't qualify
We use the pumps all the time--the other program is for part time pump users
You have to commit no to run your pumps not at peak times, I wasn't willing to make that commitment
I didn't know they offered incentives for repairs
I just decided to do it. 2

MEANS AND STANDARD ERROR OF THE MEAN: Pump Test Customers

Statistics	N		Mean	Std. Error of Mean
Survey Question	**Valid**	**Missing**		
<Pump horsepower> What is the horsepower of the pump that was tested?	29	0	62.500	10.249
<q3> How satisfied are you with the ways you found out about the program?	322	7	8.630	0.102
<q8a> The info in the material was engaging	134	195	3.330	0.055
<q8b> The info in the material was easy to understand	135	194	3.480	0.061
<q8c> The info in the material was useful	136	193	3.570	0.051
<q8d> The info in the material was believable	135	194	3.740	0.038
<q8e> The info in the material has positively affected my attitude toward energy efficiency	132	197	3.520	0.050
<q8f> I learned a considerable amount about available EE options from reading the material	137	192	3.190	0.068
<q8g> The info in the material increased the likelihood that I will investigate EE options.	137	192	3.550	0.055
<q8h> The info printed in Spanish was useful	81	248	1.800	0.120

Statistics	N		Mean	Std. Error of Mean
Survey Question	**Valid**	**Missing**		
<q14a> The info on the website was easy to find	36	293	8.750	3.702
<q14b> The info on the website was easy to understand	34	295	3.380	0.140
<q14c> The info on the website was useful	35	294	3.510	0.095
<q14d> The info on the website was believable	35	294	3.600	0.110
<q14e> The info on the website positively affected my attitude toward energy efficiency	35	294	3.230	0.130
<q14f> I learned a considerable amount about available EE options from reading the website material	34	295	3.210	0.145
<q14g> The info on the website increased the likelihood that I will investigate EE options	35	294	3.340	0.129
<q15a> It was easy to find a program approved Co to do a pump test	275	54	3.580	0.041
<q15b> It was easy to request a pump test from a program approved PT company	271	58	3.750	0.037
<q15c> Once I requested a pump test I didn't have to wait very long to have the test performed	277	52	3.740	0.034

Statistics	N		Mean	Std. Error of Mean
Survey Question	**Valid**	**Missing**		
<q15d> I didn't have to wait very long to receive the results of the pump test	278	51	3.690	0.039
<q15e> The pump test results were useful	277	52	3.790	0.031
<q15f> The pump test results were easy to understand	278	51	3.690	0.034
<q15g> I believed the financial info in the pump test report	249	80	3.550	0.042
<q15h> As a result of having my pump tested, I am now more knowledgeable about needing operating efficiency improvements for my pumping operations	280	49	3.680	0.035
<q15i> I used the pump test results to help decide whether to repair the system	20	9	4.000	0.000
<q15j> The payback was sufficient to justify a repair to my pumping system	20	9	3.450	0.170
<q15k> The expected improvements in OPE from repairing the pump were verified by the post-repair pump test	20	9	3.800	0.117

Statistics	N		Mean	Std. Error of Mean
Survey Question	**Valid**	**Missing**		
<q19a> The info from the pump tester increased my AWARENESS of potential problems with respect to pumping efficiency	316	13	3.590	0.037
<q19b> The info from the pump tester increased my AWARENESS of potential solutions for these problems	313	16	3.420	0.043
<q19c> The info from the pump tester was clearly and thoroughly gone over	311	18	3.500	0.045
<q20> What was your overall level of satisfaction with the PT process	318	11	3.750	0.027
<q27> What is your overall level of satisfaction with your pump repair experience?	29	0	3.690	0.112
<q30a> The seminar by the APEP increased my AWARENESS of potential problems with respect to pumping efficiency	26	303	3.810	0.079
<q30b> The seminar increased my AWARENESS of potential solutions to these problems	26	303	3.690	0.121
<q30c> The seminar increased my KNOWLEDGE of possible solutions to these problems.	26	303	3.730	0.105
<q32> How easy is it to get info about alternative ways of reducing energy use in pumping systems?	321	8	2.820	0.043

Statistics	N		Mean	Std. Error of Mean
Survey Question	**Valid**	**Missing**		
<q33> How willing are you to spend time looking for info on ways to reduce energy use?	329	0	3.340	0.034
<q35> How easy would it be for you to get financing for pumping system equipment changes or EE improvements?	311	18	2.940	0.050
<q42a> How many electric pumps are used in your operation?	327	2	12.250	1.023
<q42b> How many natural gas pumps are used in your operation?	325	4	1.150	0.805
<q42c> How many diesel pumps are used in your operation?	327	2	1.790	0.517
<q43yearadj> What is your estimate of the average age of your pumps? -- Years (or the midpoint of the value given in q43range)	316	13	18.860	0.655
<q46> Approximately what percentage of your total annual operating costs is spent in ELECTRICITY bills?	246	83	13.870	0.734
<q47> How important is it for you to be sure that your pumping system makes efficient use of electricity	322	7	3.710	0.029
<time> time (in years) schedule has been in place (q49)	111	218	10.324	0.884

E CEC Overlapping CATI Survey Frequencies & Means of Selected Questions

<Q1> Have you heard of the Agricultural Pumping Efficiency Program from the CPUC?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	37	64.9	71.2	71.2
	No	15	26.3	28.8	100.0
	Total	52	91.2	100.0	
Missing	DON'T KNOW	5	8.8		
Total		57	100.0		

Q2: Did you hear about APEP before/after APLR? (Multiple Responses Possible)				
Dichotomy label	**Name**	**Count**	**Pct of Responses**	**Pct of Cases**
Q2C: Before I participated in the APLR	Q2C01	25	67.6	67.6
Q2C: After I participated in the APLR	Q2C02	8	21.6	21.6
Q2C: DON'T KNOW	Q2C99	4	10.8	10.8
Total responses		37	100	100
20 missing cases; 37 valid cases				

Q3: What were your reasons for participating? (Multiple Responses Possible)				
Dichotomy label	**Name**	**Count**	**Pct of Responses**	**Pct of Cases**
Q3C: This program provided better incentives	Q3C01	6	25	25
Q3C: My pump dealer recommended this program	Q3C02	3	12.5	12.5

Q3C: I could get the incentive faster with this program	Q3C04	1	4.2	4.2
Q3C: I was more familiar with this program	Q3C05	1	4.2	4.2
Q3C: OTHER - SPECIFY	Q3C77	9	37.5	37.5
Q3C: DON'T KNOW	Q3C99	4	16.7	16.7
Total responses		24	100	100
33 missing cases; 24 valid cases				

<Q4> How easy is it to get information about alternative ways of reducing energy use in pumping systems? Would you say it is.....

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat difficult	3	5.3	12.5	12.5
	Somewhat easy	15	26.3	62.5	75.0
	Very easy	6	10.5	25.0	100.0
	Total	24	42.1	100.0	
Missing	DON'T KNOW	1	1.8		
	System	32	56.1		
	Total	33	57.9		
Total		57	100.0		

<Q5> How WILLING ARE YOU TO SPEND TIME looking for information on ways to reduce energy use? Would you say you are....

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not too willing	3	5.3	12.0	12.0
	Somewhat willing	7	12.3	28.0	40.0
	Very willing	15	26.3	60.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q6> Which of the following financial methods do you MOST typically use to evaluate energy-effiency improvements? Is it....

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Simple payback method	18	31.6	72.0	72.0
	Lowest initial investment method OR	2	3.5	8.0	80.0
	A more complex financial analysis method	5	8.8	20.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q7> How easy would it be for you to get financing for pumping system equipment changes or energy-efficient improvements? Would you say it is ...

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat difficult	5	8.8	20.8	20.8
	Somewhat easy	10	17.5	41.7	62.5
	Very easy	9	15.8	37.5	100.0
	Total	24	42.1	100.0	
Missing	DON'T KNOW	1	1.8		
	System	32	56.1		
	Total	33	57.9		
Total		57	100.0		

<Q8> How often have you NOT made necessary changes to your pumping systems DUE TO LACK OF FINANCING?. Would you say it has been.....

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Often	2	3.5	8.0	8.0
	Sometimes	6	10.5	24.0	32.0
	Not too often	6	10.5	24.0	56.0
	Never	11	19.3	44.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q9> Which of the following is your largest source of revenue? Would you say it is.....

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Vegetables or field crops	9	15.8	36.0	36.0
	Vineyard/winery	4	7.0	16.0	52.0
	Orchard	8	14.0	32.0	84.0
	Dairy farm	2	3.5	8.0	92.0
	Water district/services	2	3.5	8.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q10> Does your business own this property?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	36.8	84.0	84.0
	No	4	7.0	16.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q11> Would you consider your business or organization operated by a family or a company or government entity?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Family	19	33.3	76.0	76.0
	Company	4	7.0	16.0	92.0
	Government Entity	2	3.5	8.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q12> Compared to other businesses or organizations similar to yours, would you categorize this business or organization as small, medium or large?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Small	7	12.3	28.0	28.0
	Medium	9	15.8	36.0	64.0
	Large	9	15.8	36.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q13> How long has your company or organization been operating at its current location? Would you say....

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4 to 10 years	5	8.8	20.0	20.0
	More than 10 years	20	35.1	80.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q14A> ELECTRIC PUMPS 88888 is REFUSED 99999 IS DON'T KNOW

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	1.8	4.0	4.0
	1	2	3.5	8.0	12.0
	3	2	3.5	8.0	20.0
	5	1	1.8	4.0	24.0
	6	1	1.8	4.0	28.0
	7	1	1.8	4.0	32.0
	8	2	3.5	8.0	40.0
	10	2	3.5	8.0	48.0
	12	1	1.8	4.0	52.0
	13	1	1.8	4.0	56.0
	17	1	1.8	4.0	60.0
	20	1	1.8	4.0	64.0
	21	1	1.8	4.0	68.0
	30	2	3.5	8.0	76.0
	38	1	1.8	4.0	80.0
	40	1	1.8	4.0	84.0
	50	1	1.8	4.0	88.0
	100	1	1.8	4.0	92.0
	200	2	3.5	8.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q14B> NATURAL GAS PUMPS 88888 is REFUSED 99999 IS DON'T KNOW

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	21	36.8	84.0	84.0
	1	2	3.5	8.0	92.0
	3	1	1.8	4.0	96.0
	16	1	1.8	4.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q14C> DIESEL PUMPS 88888 is REFUSED 99999 IS DON'T KNOW

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	15	26.3	60.0	60.0
	1	4	7.0	16.0	76.0
	2	2	3.5	8.0	84.0
	5	1	1.8	4.0	88.0
	7	1	1.8	4.0	92.0
	8	1	1.8	4.0	96.0
	160	1	1.8	4.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q15YEARadj> Average age in number of years or the midpoint of the range given in q15range

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.8	4.0	4.0
	2	1	1.8	4.0	8.0
	6	1	1.8	4.0	12.0
	8	1	1.8	4.0	16.0
	9	1	1.8	4.0	20.0
	10	1	1.8	4.0	24.0
	10	2	3.5	8.0	32.0
	11	1	1.8	4.0	36.0
	13	1	1.8	4.0	40.0
	13	1	1.8	4.0	44.0
	15	1	1.8	4.0	48.0
	16	1	1.8	4.0	52.0
	18	1	1.8	4.0	56.0
	20	5	8.8	20.0	76.0
	23	1	1.8	4.0	80.0
	26	1	1.8	4.0	84.0
	30	1	1.8	4.0	88.0
	35	1	1.8	4.0	92.0
	40	1	1.8	4.0	96.0
	50	1	1.8	4.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q16> On average, how many months are the pumps used during the year? WOULD YOU SAY...

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3 to 6 months	12	21.1	48.0	48.0
	7 to 9 months	12	21.1	48.0	96.0
	10 Months to Year around	1	1.8	4.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q17> Which type of irrigation system do you use for the majority of the pumps at your site? Is it...

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Drip	7	12.3	28.0	28.0
	Sprinkler	2	3.5	8.0	36.0
	Flood/Furrow	13	22.8	52.0	88.0
	OTHER - SPECIFY	3	5.3	12.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

<Q18> Approximately, what percentage of your total annual operating costs is spent in ELECTRICITY BILLS, 88 IS REFUSED 99 IS DON'T KNOW

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	1.8	5.0	5.0
	5	1	1.8	5.0	10.0
	10	9	15.8	45.0	55.0
	12	1	1.8	5.0	60.0
	15	3	5.3	15.0	75.0
	20	3	5.3	15.0	90.0
	25	1	1.8	5.0	95.0
	50	1	1.8	5.0	100.0
	Total	20	35.1	100.0	
Missing	-99	2	3.5		
	99	3	5.3		
	System	32	56.1		
	Total	37	64.9		
Total		57	100.0		

<Q19> How important is it for you to be sure that your pumping system makes efficient use of electricity? Is it...

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat important	3	5.3	12.5	12.5
	Very important	21	36.8	87.5	100.0
	Total	24	42.1	100.0	
Missing	-99	1	1.8		
	System	32	56.1		
	Total	33	57.9		
Total		57	100.0		

<Q20> Does your company have a regular schedule for testing its pumping system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	17.5	40.0	40.0
	No	15	26.3	60.0	100.0
	Total	25	43.9	100.0	
Missing	System	32	56.1		
Total		57	100.0		

time (in years) schedule has been in place

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	1	1.8	10.0	10.0
	5.00	1	1.8	10.0	20.0
	6.00	2	3.5	20.0	40.0
	8.00	1	1.8	10.0	50.0
	10.00	2	3.5	20.0	70.0
	15.00	1	1.8	10.0	80.0
	25.00	1	1.8	10.0	90.0
	30.00	1	1.8	10.0	100.0
	Total	10	17.5	100.0	
Missing	System	47	82.5		
Total		57	100.0		

MEANS AND STANDARD ERROR OF THE MEAN: CEC Overlapping Customers

Statistics	**N**		**Mean**	**Std. Error of Mean**
Question	**Valid**	**Missing**		
<Q4> How easy is it to get information about alternative ways of reducing energy use in pumping systems? Would you say it is.....	24	33	3.130	0.125
<Q5> How WILLING ARE YOU TO SPEND TIME looking for information on ways to reduce energy use? Would you say you are....	25	32	3.480	0.143
<Q7> How easy would it be for you to get financing for pumping system equipment changes or energy-efficient improvements? Would you say it is ...	24	33	3.170	0.155
<Q14A> ELECTRIC PUMPS 88888 is REFUSED 99999 IS DON'T KNOW	25	32	33.320	10.916
<Q14B> NATURAL GAS PUMPS 88888 is REFUSED 99999 IS DON'T KNOW	25	32	0.840	0.645
<Q14C> DIESEL PUMPS 88888 is REFUSED 99999 IS DON'T KNOW	25	32	7.520	6.369

Statistics	N		Mean	Std. Error of Mean
Question	**Valid**	**Missing**		
<Q15YEARadj> Average age in number of years or the midpoint of the range given in q15range	25	32	17.720	2.321
<Q18> Approximately, what percentage of your total annual operating costs is spent in ELECTRICITY BILLS, 88 IS REFUSED 99 IS DON'T KNOW	20	37	14.500	2.220
<Q19> How important is it for you to be sure that your pumping system makes efficient use of electricity? Is it...	24	33	3.880	0.069
<time> time (in years) schedule has been in place	10	47	11.700	2.879

F MEC Survey Frequencies & Means of Selected Questions

<Q1a> The MEC demo increased my awareness of potential problems?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	4	2.2	2.2	2.2
	Somewhat Agree	32	17.4	17.6	19.8
	Strongly Agree	146	79.3	80.2	100.0
	Total	182	98.9	100.0	
Missing	Refused	2	1.1		
Total		184	100.0		

<Q1b> The MEC demo increased my awareness of potential solutions?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	2	1.1	1.1	1.1
	Somewhat Agree	53	28.8	29.1	30.2
	Strongly Agree	127	69.0	69.8	100.0
	Total	182	98.9	100.0	
Missing	Refused	2	1.1		
Total		184	100.0		

<Q1c> The MEC demo increased my knowledge of possible solutions?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	2	1.1	1.1	1.1
	Somewhat Agree	55	29.9	30.2	31.3
	Strongly Agree	125	67.9	68.7	100.0
	Total	182	98.9	100.0	
Missing	Refused	2	1.1		
Total		184	100.0		

Q2: What type of irrigation system do you use? (Multiple Responses Possible)				
Category label	**Code**	**Count**	**Pct of Responses**	**Pct of Cases**
Drip/Micro	1	91	43.3	53.5
Sprinkler	2	52	24.8	30.6
Flood/Furrow	3	56	26.7	32.9
Other	4	11	5.2	6.5
Total responses		210	100	123.5
14 missing cases; 170 valid				

Q3: What is your largest source of revenue? (Multiple Responses Possible)				
Category label	**Code**	**Count**	**Pct of Responses**	**Pct of Cases**
Vegetable/Field Crops	1	48	24.7	28.6
Livestock	2	4	2.1	2.4
Ornamental Nursery	3	6	3.1	3.6
Indoor Crops	4	3	1.5	1.8
Packing Plant	5	2	1	1.2
Vineyard/Winery	6	47	24.2	28
Orchard	7	57	29.4	33.9
Dairy Farm	8	6	3.1	3.6
Water District/Services	9	9	4.6	5.4
Other	10	12	6.2	7.1
Total responses		194	100	115.5

16 missing cases; 168 valid				

<Q4> Would you consider your business or organization operated by a family, a company, or government entity?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Family	119	64.7	70.0	70.0
	Company	39	21.2	22.9	92.9
	Government Entity	12	6.5	7.1	100.0
	Total	170	92.4	100.0	
Missing	-99	1	.5		
	Refused	13	7.1		
	Total	14	7.6		
Total		184	100.0		

<Q5> Compared to other businesses or organizations similar to yours, are you small, medium, or large?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Small	87	47.3	52.4	52.4
	Medium	61	33.2	36.7	89.2
	Large	18	9.8	10.8	100.0
	Total	166	90.2	100.0	
Missing	-99	2	1.1		
	Don't Know	1	.5		
	Refused	15	8.2		
	Total	18	9.8		
Total		184	100.0		

<Q6> How long have you been at your current location?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Up to 3 years	11	6.0	6.5	6.5
	4 to 10 years	28	15.2	16.5	22.9
	More than 10 Years	131	71.2	77.1	100.0
	Total	170	92.4	100.0	
Missing	Don't Know	1	.5		
	Refused	13	7.1		
	Total	14	7.6		
Total		184	100.0		

<Q7> Does your business own this property?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	157	85.3	94.6	94.6
	No	9	4.9	5.4	100.0
	Total	166	90.2	100.0	
Missing	Refused	16	8.7		
	Yes and No	2	1.1		
	Total	18	9.8		
Total		184	100.0		

<Q8> How many electric water pumps?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	11	6.0	7.1	7.1
	1	35	19.0	22.4	29.5
	2	23	12.5	14.7	44.2
	3	22	12.0	14.1	58.3
	4	9	4.9	5.8	64.1
	5	9	4.9	5.8	69.9
	6	8	4.3	5.1	75.0
	7	2	1.1	1.3	76.3
	8	3	1.6	1.9	78.2
	9	2	1.1	1.3	79.5
	10	6	3.3	3.8	83.3
	11	1	.5	.6	84.0
	12	3	1.6	1.9	85.9
	14	1	.5	.6	86.5
	15	7	3.8	4.5	91.0
	20	4	2.2	2.6	93.6
	23	1	.5	.6	94.2
	25	2	1.1	1.3	95.5
	40	1	.5	.6	96.2
	50	1	.5	.6	96.8
	65	3	1.6	1.9	98.7
	100	2	1.1	1.3	100.0
	Total	156	84.8	100.0	
Missing	-99	1	.5		
	Refused	27	14.7		
	Total	28	15.2		
Total		184	100.0		

<Q9> What is the average age of your pumps?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	1.1	1.4	1.4
	1	4	2.2	2.8	4.1
	2	4	2.2	2.8	6.9
	3	4	2.2	2.8	9.7
	4	1	.5	.7	10.3
	5	15	8.2	10.3	20.7
	6	2	1.1	1.4	22.1
	6	8	4.3	5.5	27.6
	7	5	2.7	3.4	31.0
	8	3	1.6	2.1	33.1
	9	1	.5	.7	33.8
	9	1	.5	.7	34.5
	10	14	7.6	9.7	44.1
	12	1	.5	.7	44.8
	13	5	2.7	3.4	48.3
	15	16	8.7	11.0	59.3
	17	1	.5	.7	60.0
	18	1	.5	.7	60.7
	20	25	13.6	17.2	77.9
	22	1	.5	.7	78.6
	23	2	1.1	1.4	80.0
	25	8	4.3	5.5	85.5
	30	16	8.7	11.0	96.6
	35	1	.5	.7	97.2
	40	3	1.6	2.1	99.3
	50	1	.5	.7	100.0
	Total	145	78.8	100.0	
Missing	-99	3	1.6		
	Don't Know	3	1.6		
	Refused	33	17.9		
	Total	39	21.2		
Total		184	100.0		

<Q10> How many months are your pumps used during the year?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 3 months	7	3.8	4.5	4.5
	3 to 6 months	70	38.0	44.9	49.4
	7-9 months	57	31.0	36.5	85.9
	Year round	22	12.0	14.1	100.0
	Total	156	84.8	100.0	
Missing	Refused	28	15.2		
Total		184	100.0		

<Q11> What percent of your total operating costs is spent in electricity bills?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	1.1	2.4	2.4
	3	1	.5	1.2	3.6
	3	2	1.1	2.4	6.0
	4	4	2.2	4.8	10.7
	5	12	6.5	14.3	25.0
	6	1	.5	1.2	26.2
	8	1	.5	1.2	27.4
	8	3	1.6	3.6	31.0
	10	14	7.6	16.7	47.6
	12	3	1.6	3.6	51.2
	13	1	.5	1.2	52.4
	15	9	4.9	10.7	63.1
	16	1	.5	1.2	64.3
	18	1	.5	1.2	65.5
	18	1	.5	1.2	66.7
	20	8	4.3	9.5	76.2
	23	1	.5	1.2	77.4
	25	9	4.9	10.7	88.1
	30	4	2.2	4.8	92.9
	35	1	.5	1.2	94.0
	40	4	2.2	4.8	98.8
	45	1	.5	1.2	100.0
	Total	84	45.7	100.0	
Missing	-99	19	10.3		
	Don't Know	27	14.7		
	Refused	53	28.8		
	System	1	.5		
	Total	100	54.3		
Total		184	100.0		

MEANS AND STANDARD ERROR OF THE MEAN: MEC Customers

Statistics	**N**		**Mean**	**Std. Error of Mean**
Survey Question	**Valid**	**Missing**		
<Q1a> The MEC demo increased my awareness of potential problems?	182	2	3.78	0.034
<Q1b> The MEC demo increased my awareness of potential solutions?	182	2	3.69	0.036
<Q1c> The MEC demo increased my knowledge of possible solutions?	182	2	3.68	0.036
<Q8> How many electric water pumps?	156	28	7.67	1.209
<Q9> What is the average age of your pumps?	145	39	15.04	0.836
<Q11> What percent of your total operating costs is spent in electricity bills?	84	100	15.11	1.137

G Statistical Results from t-tests and Chi-Square Analyses

t Tests: Pump Repair and No Repair Customers

T-test Results: **Comparing Respondents who needed a repair and made one and Respondents who needed a repair and didn't make one**					
Question	**Customer made a pump repair?**	**N**	**Mean**	**Std. Error Mean**	**T-value (Difference of the Means)**
<Q3> How satisfied are you with the ways in which you found out about the Program? Please use a scale from 1 to 10, with 1 being not at all satisfied and 10 being very satisfied.	No	194	8.72	0.119	0.538
	Yes	28	8.54	0.39	
<Q8A> The information in the printed material was presented in an engaging format. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	84	3.3	0.071	-0.575
	Yes	15	3.4	0.131	
<Q8B> The information in the printed material was easy to understand. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	83	3.52	0.079	0.741
	Yes	16	3.38	0.155	
<Q8C> The information in the printed material was useful. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	84	3.6	0.066	-0.185
	Yes	16	3.63	0.125	
<Q8D> The information in the printed material was believable. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	83	3.76	0.047	0.598
	Yes	16	3.69	0.12	
<Q8E> The information in the printed material positively affected my attitude	No	80	3.5	0.067	-0.392

T-test Results:

Comparing Respondents who needed a repair and made one and Respondents who needed a repair and didn't make one

Question	Customer made a pump repair?	N	Mean	Std. Error Mean	T-value (Difference of the Means)
toward energy efficiency. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	Yes	16	3.56	0.128	
<Q8F> I learned a considerable amount about available energy efficiency options from reading the printed material. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	85	3.2	0.09	0.058
	Yes	16	3.19	0.136	
<Q8G> The information in the printed material increased the likelihood that I will investigate energy efficiency options. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	84	3.52	0.077	-2.280*
	Yes	16	3.81	0.101	
<Q8H> The information printed in Spanish was useful. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	51	1.84	0.147	0.857
	Yes	11	1.55	0.312	
<Q14A> The information on the website was easy to find. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	18	3.61	0.164	-0.05
	Yes	8	3.63	0.183	
<Q14B> The information on the website was easy to understand. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	18	3.61	0.118	0.953
	Yes	8	3.38	0.263	
<Q14C> The information on the website was useful. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	19	3.53	0.118	-0.455
	Yes	8	3.63	0.183	

T-test Results: **Comparing Respondents who needed a repair and made one and Respondents who needed a repair and didn't make one**					
Question	**Customer made a pump repair?**	**N**	**Mean**	**Std. Error Mean**	**T-value (Difference of the Means)**
<Q14D> The information on the website was believable. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	19	3.68	0.11	0.287
	Yes	8	3.63	0.183	
<Q14E> The information on the website positively affected my attitude toward energy efficiency. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	19	3.11	0.201	-1.179
	Yes	8	3.5	0.189	
<Q14F> I learned a considerable amount about available energy efficiency options from reading the website material. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	19	3.21	0.181	0.187
	Yes	7	3.14	0.34	
<Q14G> The information on the website material increased the likelihood that I will investigate energy efficiency options. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	19	3.21	0.211	-0.473
	Yes	8	3.38	0.183	
<Q15A> It was easy to find a Program-approved company to do a pump test. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	169	3.54	0.056	-4.018**
	Yes	20	3.9	0.069	
<Q15B> It was easy to request a pump test from one of the program-approved pump test companies. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	167	3.69	0.053	-5.779**
	Yes	20	4	0	

T-test Results: **Comparing Respondents who needed a repair and made one and Respondents who needed a repair and didn't make one**					
Question	**Customer made a pump repair?**	**N**	**Mean**	**Std. Error Mean**	**T-value (Difference of the Means)**
<Q15C> Once I requested a pump test, I didn't have to wait very long to have the test performed. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	170	3.75	0.043	-0.022
	Yes	20	3.75	0.123	
<Q15D> I didn't have to wait very long to receive the results of the pump test. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	171	3.68	0.052	-0.406
	Yes	20	3.75	0.16	
<Q15E> The pump test results were useful. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	169	3.75	0.045	-2.950**
	Yes	20	3.95	0.05	
<Q15F> The pump test results were easy to understand. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	169	3.73	0.042	0.65
	Yes	20	3.65	0.131	
<Q15G> I believed the financial information in the pump test report. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	154	3.58	0.054	-0.666
	Yes	19	3.68	0.11	
<Q15H> As a result of having u teste a no ore no le ea le a out nee e o eratin effi ien i rove ents for u in o erations o ou isa ree stron l isa ree so e hat a ree so e hat a ree stron l	No	171	3.7	0.045	1.065
	Yes	20	3.55	0.153	
<Q19A> The information from the pump tester increased my AWARENESS of potential problems	No	196	3.6	0.047	0.338

T-test Results: **Comparing Respondents who needed a repair and made one and Respondents who needed a repair and didn't make one**					
Question	**Customer made a pump repair?**	**N**	**Mean**	**Std. Error Mean**	**T-value (Difference of the Means)**
with respect to pumping efficiency. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	Yes	20	3.55	0.135	
<Q19B> The information from the pump tester increased my AWARENESS OF potential solutions for these problems. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	194	3.42	0.058	-0.709
	Yes	20	3.55	0.135	
<Q19C> The information from the pump tester was clearly and thoroughly gone over. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	193	3.5	0.058	-2.782**
	Yes	20	3.8	0.092	
<Q20> Overall, what was your level of satisfaction with the pump test process? Would you say you were very dissatisfied, somewhat dissatisfied, somewhat satisfied, or very satisfied?	No	197	3.73	0.036	-1.384
	Yes	20	3.85	0.082	
<Q30A> The seminar by the APEP...increased my awareness of potential problems with respect to pumping efficiency. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	18	3.78	0.101	N/A
	Yes	1	4	.	
<Q30B> The seminar by the APEP...increased my awareness of potential solutions for these problems. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	18	3.61	0.164	N/A
	Yes	1	4	.	

T-test Results: **Comparing Respondents who needed a repair and made one and Respondents who needed a repair and didn't make one**					
Question	**Customer made a pump repair?**	**N**	**Mean**	**Std. Error Mean**	**T-value (Difference of the Means)**
<Q30C> The seminar by the APEP...increased my knowledge of possible solutions for these problems. Do you disagree strongly, disagree somewhat, agree somewhat, agree strongly?	No	18	3.72	0.135	N/A
	Yes	1	4	.	
<Q32> How easy s o e o a o a o a e a e wa s o e e e se s s e s o sa s e so ew a so ew a eas e eas	No	193	2.85	0.054	0.224
	Yes	28	2.82	0.127	
<Q33> How willing are you to spend time looking for information on ways to reduce energy use? Would you say you are not at all willing, not too willing, somewhat willing, very willing?	No	198	3.3	0.044	-1.203
	Yes	29	3.45	0.106	
<Q35> How easy would it be for you to get financing for pumping system equipment changes or energy efficient improvements? Would it be very difficult, somewhat difficult, somewhat easy, very easy?	No	192	2.96	0.063	-0.009
	Yes	25	2.96	0.168	
<Q42A> How many electric water pumps are used in your operation?	No	197	14.35	1.567	-0.09
	Yes	29	14.72	2.439	
<Q42B> How many natural gas water pumps are used in your operation?	No	196	0.5	0.156	-0.958
	Yes	28	9.39	9.282	
<Q42C> How many diesel water pumps are used in your operation?	No	198	2.38	0.843	0.663

T-test Results: **Comparing Respondents who needed a repair and made one and Respondents who needed a repair and didn't make one**					
Question	**Customer made a pump repair?**	**N**	**Mean**	**Std. Error Mean**	**T-value (Difference of the Means)**
	Yes	28	0.89	0.372	
<Q43YEARadj a a a a a a	No	190	18.022	0.7873	-0.135
	Yes	29	18.328	2.6124	
<Q46> Approximately at per e tae o o r total a al operati o t i pe t i ele tri it ill	No	147	13.19	0.991	0.406
	Yes	23	12.13	1.85	
<Q47> How important is it for you to be sure that your pumping system makes efficient use of electricity? Is it not at all important, not too important, somewhat important, very important?	No	194	3.65	0.041	-2.689**
	Yes	29	3.86	0.065	
<Time (Q49)> How long has your company's schedule for testing its pumps been in place?	No	70	10.7643	1.03966	-0.856
	Yes	11	15	4.8397	

* Significant at the 0.05 level.

**Significant at the 0.01 level.

t Tests: APLR AND APEP PARTICIPANTS

T-test Results: **Comparing Respondents who participated in the APEP Program and made a repair versus those who participated in the APLR (CEC) Program**					
Question	**Customer is an APEP Participant?**	**N**	**Mean**	**Std. Error Mean**	**T-value (Difference of the Means)**
<getinfo> How easy is it to get info about alternative ways of reducing energy use in pumping systems?	Yes	28	2.820	0.127	-1.695
	No	24	3.130	0.125	
<willinfo> How willing are you to spend time looking for info on ways to reduce energy use?	Yes	29	3.450	0.106	-0.181
	No	25	3.480	0.143	
<getfin> How easy would it be for you to get financing for pumping system equipment changes or EE improvements?	Yes	25	2.960	0.168	-0.901
	No	24	3.170	0.155	
<noelec> How many electric pumps are used in your operation?	Yes	29	14.720	2.439	-1.663
	No	25	33.320	10.916	
<nogas> How many natural gas pumps are used in your operation?	Yes	28	9.390	9.282	0.868
	No	25	0.840	0.645	
<nodies> How many diesel pumps are used in your	Yes	28	0.890	0.372	-1.039

T-test Results: **Comparing Respondents who participated in the APEP Program and made a repair versus those who participated in the APLR (CEC) Program**					
Question	**Customer is an APEP Participant?**	**N**	**Mean**	**Std. Error Mean**	**T-value (Difference of the Means)**
operation?	No	25	7.520	6.369	
<avgapmps> What is your estimate of the average age of your pumps?	Yes	29	18.330	2.612	0.171
	No	25	17.720	2.312	
<percelec> Approximately what percentage of your total annual operating costs is spent in ELECTRICITY bills?	Yes	23	12.130	1.850	-0.826
	No	20	14.500	2.220	
<eeimpor> How important is it for you to be sure that your pumping system makes efficient use of electricity	Yes	29	3.860	0.065	-0.136
	No	24	3.880	0.069	
<time> time (in years) schedule has been in place	Yes	11	15.000	4.840	0.571
	No	10	11.700	2.979	

*Significant at the 0.05 level.

**Significant at the 0.01 level.

t TESTS: MEC PARTICIPANTS AND PT CUSTOMERS

T-test Results: **Comparing Respondents' rating of the impact on their awareness given information received through the pump tester versus through an APEP seminar or MEC demo**					
Question	**Customer completed MEC Survey?**	**N**	**Mean**	**Std. Error Mean**	**T-value (Difference of the Means)**
<awarprob> The information from the pump tester OR MEC demo increased my AWARENESS of potential problems with respect to pumping efficiency.	Yes	182	3.78	0.034	4.178**
	No	291	3.56	0.040	
<awarsol> The information from the pump tester OR MEC demo increased my AWARENESS OF potential solutions for these problems.	Yes	182	3.69	0.036	4.867**
	No	288	3.40	0.046	

*Significant at the 0.05 level.

**Significant at the 0.01 level.

Chi-Square Test:

For Crosstab between the indicated question and whether a customer who needed a repair made one.

Question	**Valid N**	**Chi-Square**	**Significance**	**Strength of Relationship (a)**
<Q4> In 2002 and 2003, approximately how many times have you been contacted by the Center for Irrigation Technology about pumping efficiency? Have you been contacted.... ?	222	2.133	0.344	N/A (c)

Question	Valid N	Chi-Square	Significance	Strength of Relationship (a)
<Q5> Other than a pump test result, did you receive printed material from the Program such as pamphlets or pumping energy calculator?	215	0.615	0.433	N/A
<Q9> Did receiving Program information or talking to program staff cause you to make any changes in your irrigation practices?	224	5.000	0.025*	moderate
<Q11> Were you aware that there was a website with information about this program?	225	4.641	0.031*	moderate
<Q12> Did you use the Program website to learn about or obtain information on getting a pump tested or making pump repairs?	98	3.153 (b)	0.076	N/A
<Q16> Did the person who gave you the pump test results give you more or different information than you had received in the past?	209	0.868	0.351	N/A
<Q18> Did the pump test person go over an economic analysis of your pump based on the pump test?	208	2.989	0.084	N/A
<Q29> Did you participate in any of the APEP seminars or demonstrations by the Mobile Education Center?	227	1.050 (b)	0.305	N/A
<Q31> Prior to participating in this Program, did you know that using efficient technologies, products, system design, and services relating to your pumping system could affect your electricity bills?	227	0.015 (b)	0.903	N/A
<Q34> Which of the following financial methods do you typically use to evaluate energy-efficiency improvements?	223	11.921	0.003**	strong

Question	Valid N	Chi-Square	Significance	Strength of Relationship (a)
<Q36> How often have you NOT made necessary changes to your pumping systems DUE TO LACK OF FINANCING?	223	7.031	0.071	N/A
<Q37> Which of the following is your largest source of revenue?	225	8.279 (b)	0.506	N/A
<Q38> Does your business own this property?	226	0.260 (b)	0.610	N/A
<Q39> Would you consider your business or organization operated by a family or a company or government entity?	226	0.890 (b)	0.828	N/A
<Q40> Compared to other businesses or organizations similar to yours, would you categorize this business or organization as small, medium or large?	227	2.402	0.301	N/A
<Q41> How long has your company or organization been operating at its current location?	226	0.398 (b)	0.528	N/A
<Q44> On average, how many months are the pumps used during the year?	224	0.298	0.585	N/A
<Q45> Which type of irrigation system do you use for the majority of the pumps at your site?	225	4.121	0.249	N/A
<Q48> Does your company have a regular schedule for testing its pumping system?	227	0.073	0.787	N/A

a. Based on the value of the relevant measure of the strength of the relationship tested: 0.00-0.10 is noted as weak; .11-.20 is noted as moderate; and, 0.21-.30 is noted as strong.

b. Insufficient data make the Chi-Square results reported for this question unreliable.

c. The value of the Chi-Square statistic is not significant.

*Significant at the 0.05 level.

**Significant at the 0.01 level.

Chi-Square Test:
For Crosstab between the indicated question and whether a customer participated in the APLR or was an APEP Repair Customer.

Question	Valid N	Chi-Square	Significance	Strength of Relationship (a)
<finmeth> Which of the following financial methods do you typically use to evaluate EE improvements?	53	4.206 (b)	0.122	N/A (c)
<nochngs> How often have you NOT made necessary changes to your pumping system due to lack of financing?	54	0.321 (b)	0.852	N/A
<lgrev> Which of the following is your largest source of revenue?	54	3.446 (b)	0.751	N/A
<ownprop> Does your business own this property?	54	0.015 (b)	0.903	N/A
<typeco> Would you consider your business owned by a	54	0.430 (b)	0.806	N/A
<size> Compared to other similar businesses or orgs, is your business small, med, or large?	54	0.287	0.866	N/A
<timeloc> How long operating at the current location?	54	0.992 (b)	0.319	N/A
<moused> On average, how many months are the pumps used during the year?	54	0.054	0.816	N/A
<irrsys> Which type of irrigation system do you use for the majority of the pumps at your site?	54	2.823 (b)	0.420	N/A

a. Based on the value of the relevant measure of the strength of the relationship tested: 0.00-0.10 is noted as weak; .11-.20 is noted as moderate; and, 0.21-.30 is noted as strong.

b. Insufficient data make the Chi-Square results reported for this question unreliable.

c. The value of the Chi-Square statistic is not significant.

*Significant at the 0.05 level.

**Significant at the 0.01 level.

H In-depth CIT Staff Survey Instrument

[SUMMARY OF THESE QUESTIONS IS PROVIDED IN APPENDIX O]

California Irrigation Technology

Agricultural Pump Efficiency Program
Staff Interview Guide

The following set of questions will be asked of the Agricultural Pumping Efficiency Program (APEP)staff for the purposes of assessing the program objectives, the communication within the APEP staff, resource allocation, and timing.

In-depth interviews are planned with the following APEP staff:

Program Manager (1)
Communications Person (1)
Area Coordinators (3)
Education (2)
Rebate Processing & Pump Tester Coordination (1)
Accounting (1)
Marketing (1)
Support (1)

The following questions will be asked of interviewees, depending on the appropriateness of the question to the person being interviewed. However, the intent is to ask as many questions as possible with each level of interviewee in order to compose a complete picture of the level of knowledge, communication, and buy-in to the program objectives and goals.

The guide is only an outline, allowing the interviewee and interviewer to deviate into areas that contribute to an overall understanding of program operation.

There are ten areas that will to be covered during the 11 planned in-depth interviews (1 planned interviews with Program Manager and 10 planned interviews with Program Staff). They are:

General Information 2
Program Training / Staffing 2
Program Goals/Strategies 2
Program Target Population 3
Program Promotion and Marketing 3
Program Delivery 4
Customer Tracking and Program Database 4
Pump Tests 5
Date Quality Control 5
General Suggestions and Other Comments 5

General Information

1. What are your responsibilities in APEP? What are your qualifications to fill that role? How many other people within the APEP perform your role or something very similar to your role? [All]
2. What other responsibilities do you have at the CIT? What percent of your time is spent on APEP versus these other responsibilities? [All]
3. Does this allow adequate time to fulfill your APEP responsibilities? [All]
4. How many staff are currently involved in the operation of the program (promotion, administration, monitoring)? [All]
5. Please describe the organizational structure used to the implement the program. [All]
6. How often and in what formats do you communicate with the [program staff (Pete) or program management (all others)]? What kinds of issues do you communicate about? Does this relationship work well? What are its strengths and weaknesses? Can you recommend improvements? [All]
7. Has the ramp up of the program gone as smoothly as could be expected? What could have improved it? [All]
8. What is your opinion of the current distribution of program implementation staff? Would more or less be better? More or less where? [All]
9. What is your opinion of the current distribution of program implementation responsibilities? What if any areas could use augmentation? [All]
10. What is your opinion of the communication among people/groups responsible for different aspects of the program? [All]
11. What staffing/organizational improvements would you suggest? [All]

Program Training / Staffing

12. How are program implementation staff provided training on the program? Are there training manuals, are there materials used, or is the training informal? (Request copies of material if available.) [All]
13. What training improvements would you suggest? [All]
14. Are there any specific qualifications required for any of the program positions? [All]

Program Goals/Strategies

15. What are the goals of the program? Have the goals changed since the start of the program? Are the goals appropriate? Are there other goals that should be included? (What are they?) [All]
16. How are the program goals set? Who sets them? [All]
17. How are program goals communicated to you? Are they communicated clearly? How do you communicate them to your staff (if applicable (Pete))? [All]
18. What goals have been achieved in the program to date? [All]
19. Where has the program fallen short of its goals? Where has it exceeded goals? [All]

20. What actions do you think would increase the success of the program in reaching its goals? If they exceeded the goals why do you think that occurred? [All]
21. What part do you play in meeting those goals? [All]

Program Target Population

22. Who do you see as the primary market for the program? Are there any other markets? [Pete, Area Coordinators and Marketing]
23. Is the program reaching that/those market(s)? Describe the makeup of program participants to date. What are the response rates? How are the response rates computed/tracked? [Pete, Area Coordinators and Marketing]
24. Has the program targeted any specific segments of the agricultural market such as small or medium size customers? [Pete, Area Coordinators and Marketing]
25. Are there changes you might suggest in program marketing? [Pete, Area Coordinators and Marketing]

Program Promotion and Marketing

26. How do prospective participants learn about the program? Which marketing strategies are primary? Secondary? [Pete, Communications, Area Coordinators, Education and Marketing]
27. What are the specific staff responsibilities in program promotion? [Pete, Communications, Area Coordinators, Education and Marketing]
28. What feature(s) of the program do you think are the most influential in inducing customers to participate? [Pete, Communications, Area Coordinators, Education and Marketing]
29. What features tend to stop customers from participating? [Pete, Communications, Area Coordinators, Education and Marketing]
30. What are the advantages and disadvantages of the current marketing arrangements? What would you change? [Pete, Communications, Area Coordinators, Education and Marketing]
31. Was market research done and was it available for the design of this program? Please describe. [Pete, Communications, Area Coordinators, Education and Marketing]
32. Is there any mass marketing of the program? Who is responsible for it? What material is sent out? (obtain copy of material if possible) [Pete, Communications, Area Coordinators, Education and Marketing]
33. Who supervises this? [Pete, Communications, Area Coordinators, Education and Marketing]
34. When does this happen? [Pete, Communications, Area Coordinators, Education and Marketing]
35. Does this system work well? What changes would you make? [Pete, Communications, Area Coordinators, Education and Marketing]

Program Delivery

36. Who decides what information is offered to each customer? [Pete, Communications, Area Coordinators, Education and Marketing]

37. How often do you interact with APEP customers? (If never, skip to Q42) [All]
38. What type of interaction is this and what information do you provide to the customer? (i.e., phone, in-person, extensive, short, send APEP information, discuss technical information, etc.) [if yes on 37]
39. If the customers request information, what is the average time it takes between the time they request and receive that information? [if yes on 37]
40. How do you track your interactions with customers? [if yes on 37]
41. Generally, what part of your customer interactions work well and what parts have difficulties? How would you improve these difficulties? [if yes on 37]
42. What information within the APEP do you handle? How do you obtain that information and how do you pass it on to others? Do you have any suggestions on how to improve or change the flow of information? [All]

Customer Tracking and Program Database

43. Do you in any way track customers from initial contact about pump testing/repair? [Pete]
44. How many times do you believe the average customer has contact with the center before they decide to do a pump test? [Pete]
45. What are the criteria for where the MEC goes? Who makes those judgments?[Pete]
46. What changes have been made in the MEC program/schedule as time has passed?[Pete]
47. What are the criteria that define the "success" of the MEC component? [Pete]
48. How are seminars planned for the fixed laboratories in Fresno and Chico? What are the criteria for attendance? Who sets the criteria? [Pete]

Pump Tests

49. How are the trade allies that perform pump tests for the program trained in the program requirements/procedures? [Pete, Area Coordinator, Results Processing and Pump Test Coordinator]
50. How does the program track the pump test company's efforts in Economic Analysis and Education on the test results? How do you check that the report is HAND CARRIED to the customer? [Pete, Area Coordinator, Results Processing and Pump Test Coordinator]
51. How does the program assure that customers are receiving quality pump tests? [Pete, Area Coordinator, Results Processing and Pump Test Coordinator]
52. Who or how is pump tester quality tracked over time? [Pete, Area Coordinator, Results Processing and Pump Test Coordinator]
53. What percentage of the completed tests is checked for quality control? How are they checked? [Pete, Area Coordinator, Results Processing and Pump Test Coordinator]
54. What percentage of the tests you submit is rejected as incomplete or inadequate? Has this percentage changed over time? [Pete, Area Coordinator, Results Processing and Pump Test Coordinator]

55. What are there consequences if a tester performs poor quality tests? [Pete, Area Coordinator, Results Processing and Pump Test Coordinator]

Data Quality Control

56. Who is responsible for monitoring/maintaining database completeness and integrity? Paper file completeness and integrity? [Pete, Results Processing and Pump Test Coordinator]
57. Does the person who performs the quality control have other responsibilities? What are they and do they delay or interfere with the quality control task? [Pete, Results Processing and Pump Test Coordinator]
58. What are the criteria for acceptability? [Pete, Results Processing and Pump Test Coordinator]
59. How are records of quality control maintained? [Pete, Results Processing and Pump Test Coordinator]
60. How are customer complaints handled? [Pete, Results Processing and Pump Test Coordinator]

General Suggestions and Other Comments

I In-depth Pump Test Company Survey Instrument

[FREQUENCIES FOR THESE QUESTIONS ARE PROVIDED IN APPENDIX O]

The following questions will be asked of employees of pump test companies, depending on the appropriateness of the question to the person being interviewed. The guide is only an outline, allowing the interviewee and interviewer to deviate into areas that contribute to an overall understanding of program operation.

There are eight areas that will be covered during the 10 planned in-depth interviews. They are: Demographics, General Information, Program Goals/Strategies, Program Promotion and Marketing, Program Delivery, Pump Tests, and General Suggestions and Other Comments

Company Name: _____

Contact Name: _____

Interviewer Name: _____

Interview Date: _____Start Time: _____

Hello, my name is _____. The state of California requires that the Agricultural Pumping Efficiency Program perform an evaluation of their program. I was hoping to get a bit of your time to discuss your role in pump testing and pump repair within this program.

Are you either the person, or one of the people, at your company responsible for doing pump tests or pump repairs under the Agricultural Pumping Efficiency Program?

____ Yes (if yes, go to BEGINNING)

____ No Can you tell us who in your company is responsible for doing pump tests or pump repairs under the Agricultural Pumping Efficiency Program?

____ Yes _____ Thank and terminate.

____ No. Thank you very much for your time.

BEGINNING: Do you have 15 minutes to answer some questions about how you work with the program?

No Can we schedule a time when it is convenient? _____

Yes (continue)

From now on I will refer to the Agricultural Pumping Efficiency Program as APEP or the "program". First I would like to ask some information about your firm.

Demographics

1. Would you consider your company a large, medium, or small company compared to others in your field?
   Small 1
   Medium 2
   Large 3
   Don't know (**DO NOT READ**)..... DK (-8)
   Refused (**DO NOT READ**) .....REF (-9)

2. How long have you been in business at this location?
   1 to 3 years 1
   4 to 10 years 2
   More than 10 years.....3
   Don't know (**DO NOT READ**)..... DK (-8)
   Refused (**DO NOT READ**) .....REF (-9)

3. What equipment and services does your company offer? (CHECK ALL THAT APPLY)
   Pump Sales.....1
   Pump Servicing & Repair.....2
   Pump Installation 3
   Pump Testing 4
   Irrigation System Design 5
   Irrigation System Installation 6
   Well Drilling 7
   Other SPECIFY:_____ 8
   Don't know (**DO NOT READ**)..... DK (-8)
   Refused (**DO NOT READ**) .....REF (-9)

4. How have your customers learned that your company was participating in the Program? (Check all that apply)
   You told them.....1
   From the APEP program staff or their website.....2

From other customers 3

Other SPECIFY:_____ 4

Don't know (**DO NOT READ**)..... DK (-8)

Refused (**DO NOT READ**) .....REF (-9)

General Information

5. How often and in what formats do you communicate with the APEP program staff? What kinds of issues do you communicate about? (Does this relationship work well? What are its strengths and weaknesses? Can you recommend improvements?)

6. From your viewpoint, does the program seem to have enough staff to make things flow smoothly? Any suggestions for areas of improvement?

7. What is your opinion of the communication among people/groups responsible for different aspects of the program? (Don't read: e.g., between you and the field coordinators, pump test coordinators, and the rebate processing staff)

Program Goals/Strategies

8. What is your understanding of the primary goals of the CIT Agricultural Pump Efficiency program? Have the goals changed since the start of the program? Are the goals appropriate? Are there other goals that should be included? (What are they?)

9. How were program goals communicated to you?

10. What actions do you think would increase the success of the program in reaching its goals?

Program Promotion and Marketing

IF PUMP REPAIR COMPANY CONTINUE, ELSE SKIP TO Q14.

11. Have you promoted the pump repair rebate to your customers? If so, how?

12. What in particular do you think that your marketing of the pump repair rebates does to cause customers to repair their pump under the program?

13. Do you think that your participation in the APEP program brought in more pump repair customers in 2002 and 2003 than you would have had otherwise? If yes, can you qualify it to be quite a bit, a few, etc?

14. Are there changes you might suggest in program design or implementation to better reach a wider or different set of customers?

15. What are the advantages and disadvantages of the current program marketing arrangements? What would you change?

Program Delivery

16. Does your company provide pump testing under the program?

    IF NO, SKIP TO Q19, ELSE CONTINUE

17. Who decides what information you provide to each customer after a pump test?

18. Does this system work well? What changes would you make?

IF PUMP REPAIR COMPANY, CONTINUE, ELSE GO TO Q21.

19. Do you feel that the approaches that you have used to market the program have influenced customers to repair their pumps? If so, what are the specific approaches that have been successful?

20. What do you think the program might do to make your marketing more successful in influencing customers to make pump repairs?

Pump Tests IF NO ON Q16, SKIP TO Q30, ELSE CONTINUE.

21. How long does the typical pump test take including travel time to and from the pump location?

22. How much time do you typically spend developing the pump test report and discussing it with the customer?

23. What are the criteria for whether a pump test should be done?

24. How were you trained in the program requirements/procedures?

25. As part of the program, you are supposed to hand deliver an Economic Analysis to the customer and explain the results. Do you do this, and how does the program track whether you do?

26. How does the program assure that customers are receiving quality pump tests?

27. What is your estimate of the percentage of customers who really understand the pump test results? Do you take any specific actions to help customers understand the pump test results?

28. Can you suggest changes in the program that would increase the likelihood that the customers would understand the pump test results?

29. Do you think that the pump test results provide adequate information to help the customer make a decision whether or not to make pump repairs? If no, what else should be there?

30. What do you think is the key factor in a customer's decision to repair or not to repair the pump? Can the program do anything to influence that decision in a positive way?

31. Some pump test results show good economic incentive for repairing a pump, yet customers don't repair them. Do you have any insight into typical reasons that they don't

repair the pump under these conditions? (Don't read, but if appropriate ask if rebate is adequate.)

32. How much of a role do you believe the amount of the pump repair rebate has on a customer's decision? Does this decision depend on the size of the grower's operation?

33. General Suggestions and Other Comments

Uses and Sources Chart - APEP Pump Test Company Participants - In-depth interview

Q	Firm.	Process	Impact	Implementation Theory Linkage							Program Theory Linkage					
				1	13	14	15	16	18	25	2	9	10	11	13	21
1	X															
2	X															
3	X															
4		X		X												
5		X		X						X						
6		X			X	X	X	X	X							
7		X		X						X						
8		X								X						
9		X								X						
10		X		X												
11		X	X													X
12		X	X													X
13		X	X													X
14		X	X	X						X	X					X
15		X		X												
16	X															
17		X		X	X											
18		X		X	X											
19		X	X													X
20		X	X													X
21		X				X										
22		X				X										
23		X				X	X		X	X						
24		X				X	X	X	X	X						
25		X							X							
26		X							X							
27		X										X				
28		X										X				
29		X	X						X			X	X	X		
30		X	X										X	X		
31			X										X		X	
32			X										X		X	

J In-depth Interview Guide for Synergies Discussion with Program Manager

Agricultural Pumping Efficiency Program

Relationships Between CIT and Other Agencies

The purpose of these questions is to document the relationships that have developed between CIT and other agencies or organizations during the course of the APEP. There is a template of information that we want to gather about each organization that you have relationships with as well as a few overarching questions.

For each specific agency or organization that the APEP has developed a relationships relationship with please provide the following pieces of information.

1. Name of agency or organization
2. Whether it is federal, state, local, or private
3. Date the relationship began.
4. Type of entity (water use, grower organization, education institution, etc.)
5. Whether this is a formal or information relationship.
6. If formal, how the relationship has been codified (contract, MOU, etc.)
7. The frequency and type of communication that occurs between the APEP and the organization
8. Discuss if this relationship was already established through the CIT and just extended to the APEP, whether it is an enhancement of an existing relationship, or if it was newly established through the APEP.
9. What does the APEP expect to receive from the organization?
10. What does the organization expect to receive from APEP?
11. On a scale of 1-5 (1=poor, 5=excellent), rate what your assessment is of this relationship. Why?

For each specific agency or organization that the APEP <u>would like</u> to develop a relationship with, but has not yet done so please provide the following pieces of information:

1. Name of agency or organization
2. Whether it is federal, state, local, or private
3. Type of entity (water use, grower organization, education institution, etc.)
4. Whether you would want a formal or information relationship.
5. Discuss if this relationship is already established through the CIT and you just want to extend it to the APEP, whether it would be an enhancement of an existing relationship or if it would be a newly established relationship with the APEP.

6. Is this undeveloped relationship simply planned for the future or has something limited the development?
7. What has limited the development of some relationships? Resources? Conflicting goals?
8. What would you expect to receive from the organization?
9. What would you provide the organization?
10. On a scale of 1-5 (1=low, 5=high), rate how much you would like to establish a relationship. Why?

There are six overall questions:

1. Are there set goals (or informal goals) for relationships with other organizations? If so, what are they and where are they documented?
2. How is the success of these relationships measured? Is it qualitative or quantified? How and where is this documented for each agency?
3. Are the developed relationships of a short term or long term nature?
4. Will they exist only for the duration of the APEP, or longer through the CIT?
5. If they will exist for a longer term, how would you visualize the relationships evolving?
6. Have the relationships that have (or have not) been developed affected CIT's plans, goals, or strategies for the implementation of the APEP?

Organizations with Current Relationships

Name of agency or organization:
_____

Federal, State, Local, or Private (circle one)

Date the relationship began: _____

Type of entity (water use, grower organization, education institution, etc.)

Formal or Information relationship (circle one)

If formal, how the relationship has been codified (contract, MOU, etc.)

The frequency and type of communication that occurs between the APEP and the organization

Discuss if this relationship was already established through the CIT and just extended to the APEP, whether it is an enhancement of an existing relationship, or if it was newly established through the APEP.

What does the APEP expect to receive from the organization?

What does the organization expect to receive from APEP?

On a scale of 1-5 (1=poor, 5=excellent), rate what your assessment is of this relationship.

Rated value: _____

Why?

Organizations with Potential Relationships

Name of agency or organization:

_____

Federal, State, Local, or Private (circle one)

Type of entity (water use, grower organization, education institution, etc.)

Whether you would want a formal or information relationship.

Discuss if this relationship is already established through the CIT and you just to extend it to the APEP, whether it would be an enhancement of an existing relationship, or if it would be a newly established through the APEP.

Is this undeveloped relationship simply planned for the future or has something limited the development?

What has limited the development of some relationships? Resources? Conflicting goals?

What would you provide the organization?

On a scale of 1-5 (1=low, 5=high), rate how much you would like to establish a relationship.

Rated value: _____

Why?

K Survey Instrument for Mobile Irrigation Lab Seminar

1. How much did this seminar help you to understand CIT's Ag Pumping Efficiency Program? (please circle the most appropriate number) 1 = Very Little 10 = A Great Deal

   1 2 3 4 5 6 7 8 9 10

2. What is the likelihood that you will promote the CIT program during your Mobile Irrigation Lab work? (please circle the most appropriate number)
   1 = Definitely Would Not Promote 10= Definitely Would Promote

   1 2 3 4 5 6 7 8 9 10

IF YOU ANSWERED 1-5 ON QUESTION 2, PLEASE ANSWER THIS QUESTION.

3. Why would it be unlikely that you would promote the CIT program? (check all that apply)
   [ ] I don't have time to present the information to the grower.
   [ ] I don't have the proper promotional materials.
   [ ] I don't understand program well enough.
   [ ] I don't feel it will be of value to the grower.

Other._____

_____

_____

4. What are the most important things you learned during the seminar? (check all that apply)
   [ ] I didn't realize that most utilities have discontinued their pump test programs.
   [ ] I didn't know CIT's Ag Pump Efficiency Program existed.
   [ ] The program includes cost sharing for pump repairs.
   [ ] The program appears to be well organized and supported.
   [ ] The CIT program will enhance the Mobile Lab Program.

Other:

_____

_____

_____

5. What would have made the seminar better or more useful to you?

_____

_____

_____

_____

6. Approximately how many Irrigation System Evaluations do you think your Mobile Lab will perform between now and the end of 2003? _____.
   What percentage of these evaluations do you anticipate you would recommend/refer the
   grower to use the CIT pump test / repair program? _____%

7. Are you planning to make any Mobile Irrigation Lab presentations that would include promoting the CIT pump test/repair program at grower seminars this year? Yes / No.
   If yes, number of presentations? _____.
   On average, how many people do you think will attend each presentation? _____

8. What counties does the Mobile Irrigation Lab you are involved with provide services and what is your sponsoring organization?
   Counties:_____

   _____

   Organization:

   _____

   _____

L Survey Instrument for Education at the Mobile Energy Centers

The first survey here is the survey presented to the MEC participants. The second document is an observation guide used by the Team to provide qualitative information on the presentation.

In compliance with California Public Utility Commission requirements, the Agricultural Pump Efficiency Program is evaluating the services and information you received through this presentation. We request your assistance with the following quick survey and note that the answers you provide will be kept strictly confidential and will not be directly attributable to you. Thank you very much for your cooperation!

1. The following is a series of statements about the effectiveness of the presentation you attended. For each statement, please mark the appropriate box to indicate whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree.

The presentation…	**Strongly Agree**	**Somewhat Agree**	**Somewhat Disagree**	**Strongly Disagree**
A. …increased my awareness of potential *problems* with respect to pumping efficiency.				
B. …increased my awareness of potential *solutions* for these problems.				
C. …increased my *knowledge* of possible solutions for these problems.				
Comments on these three areas?				

2. Which type of irrigation system do you use for the majority of the pumps at your site?

   ❑ Drip/Micro ❑ Sprinkler ❑ Flood/Furrow ❑ Other(**SPECIFY**) _____

3. Which of the following is your largest source of revenue?

   ❑ Vegetables or field crops ❑ Livestock ❑ Ornamental nursery ❑ Indoor crops (greenhouse)
   ❑ Packing plant ❑ Vineyard/winery ❑ Orchard ❑ Dairy farm
   ❑ Water district/services
   Other (**SPECIFY**) _____

4. Would you consider your business or organization operated by a family, a company, or government entity?

   ❑ Family ❑ Company ❑ Government Entity

5. Compared to other businesses or organizations similar to yours, how would you categorize yourself?

   ❑ Small ❑ Medium ❑ Large ❑ Don't know

6. How long has your company or organization been operating at its current location?

   ❑ Up to 3 years ❑ 4 to 10 years ❑ More than 10 years

7. Does your business/organization own the property at this current location? ❑ Yes ❑ No

8. How many electric water pumps are used in your operation? _____

9. What is your estimate of the average age of the pump(s) at your site? _____ years old

10. On average, how many months are the pumps used during the year?

    ❑ Less than 3 months ❑ 3-6 months ❑ 7-9 months ❑ Year round

11. Approximately, what percentage of your total annual operating costs is spent on electricity bills for your pumps?

    Approximate %: _____%

Instructions and Definitions for the Mobile Energy Center Observation Guide

Instructions

- ❑ Count total stock count of program materials brought to demonstration; count total stock count of materials after demonstration is finished.
- ❑ Collect materials handed out at seminar/demonstration.
- ❑ Take picture of reps and demonstration site, including cover used for shade if an outside event.
- ❑ Take pictures of seminar room if a fixed site presentation; if non-fixed site, take picture of area where lecture/presentation occurs.
- ❑ Complete observation guide. The descriptive information should be summarized/indicated after the entire demonstration is complete.
- ❑ Pass out MEC demonstration survey to participants after the presentation. Hand out MEC survey to as many folks as possible, but you need not ask any follow-up questions. Collect surveys before participant leaves the site.

Definitions

- Location Easy to Find: Need to stop and find directions or drive around to find?
- MEC Demonstration is a professional operation: Clean truck/fresh displays/nice lettering/clean equipment.
- MEC Rep greets visitors: Welcomes visitors, hands out card upon arrival.
- MEC Rep engages participants during demonstration: Asks participants questions during presentation/involves the participants in the demonstration/directs information and presentation directly to participants in a way that captures their attention.
- Engaged Participants: Attentive during demonstration/significant interaction with MEC Rep/listening intently/picked up materials/asked questions/asked for additional program information.
- Casual Observers: Mill around/Don't interact with MEC Rep – will infer total from other information collected.
- Demonstration: Showing processes/info in MEC.
- Lecture: Video/Power Point Presentation/Verbal lecture during seminar presentation.

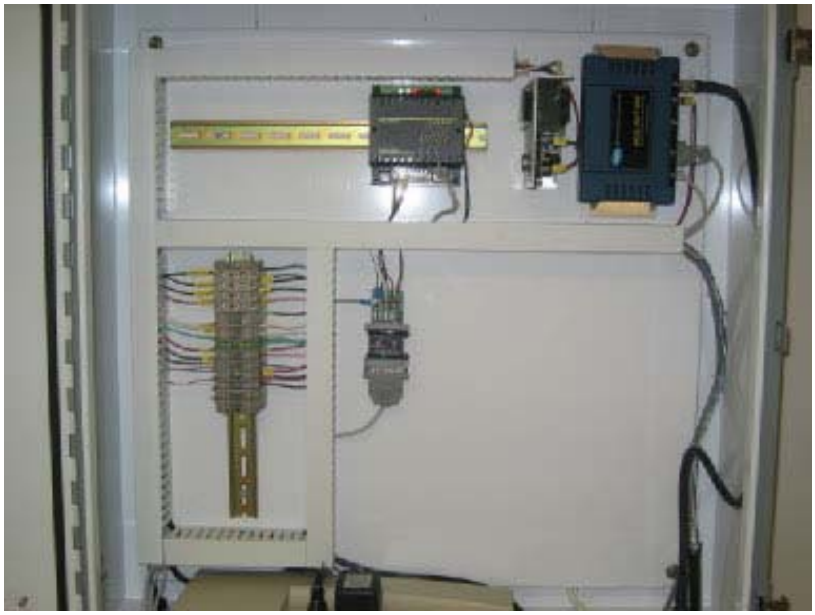
Descriptions to Include in Comments

- Describe MEC Reps dress/appearance.
- Describe MEC demonstration visually.
- Describe seminar set-up visually as well as presentation structure/format.
- Describe/list topics discussed during presentation and demonstration.
- Make a general remark about whether there were enough MEC reps to interact with attendees and answer participant questions.

M Graphics of Chico Facility Improvement

The next set of pictures detail the current irrigation facility set up. The picture is provided along with a short statement about what it shows.

The computer and SCADA control box located within the mechanical room.



Control panel with three different types of connections: direct connect via Ethernet, RS232 Modem via twisted pair phone line, and radio frequency spread spectrum, 900 MHz.

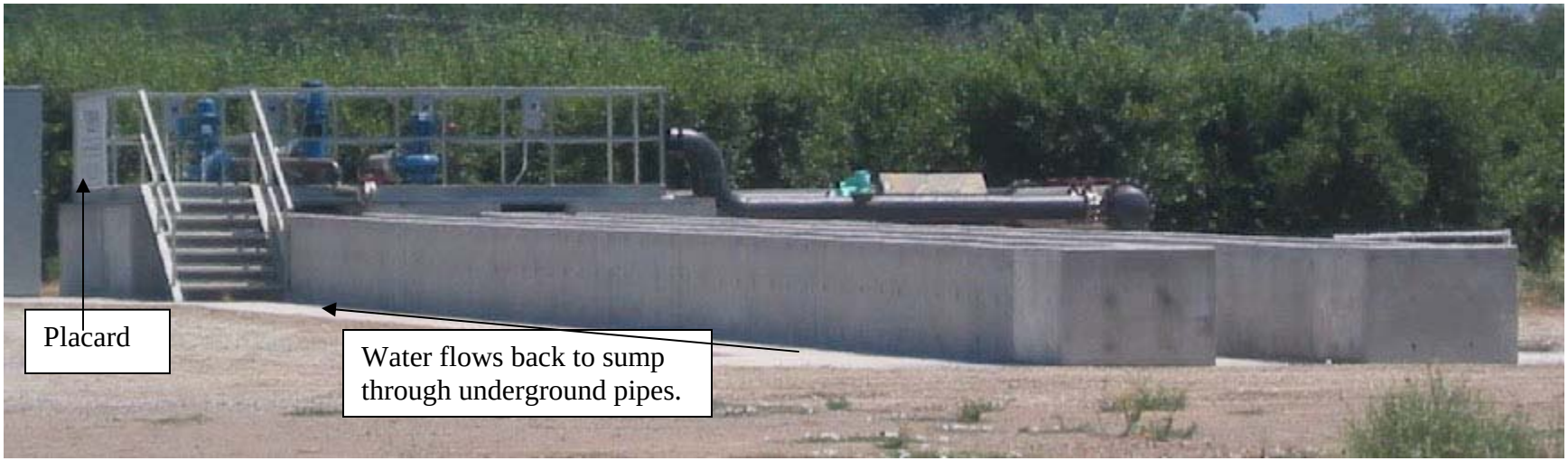
Education room from the front of the room.

Education room from the back of the room. Video projector with screen.

Mechanic room area that can cleaned up and used for demonstration area if needed.

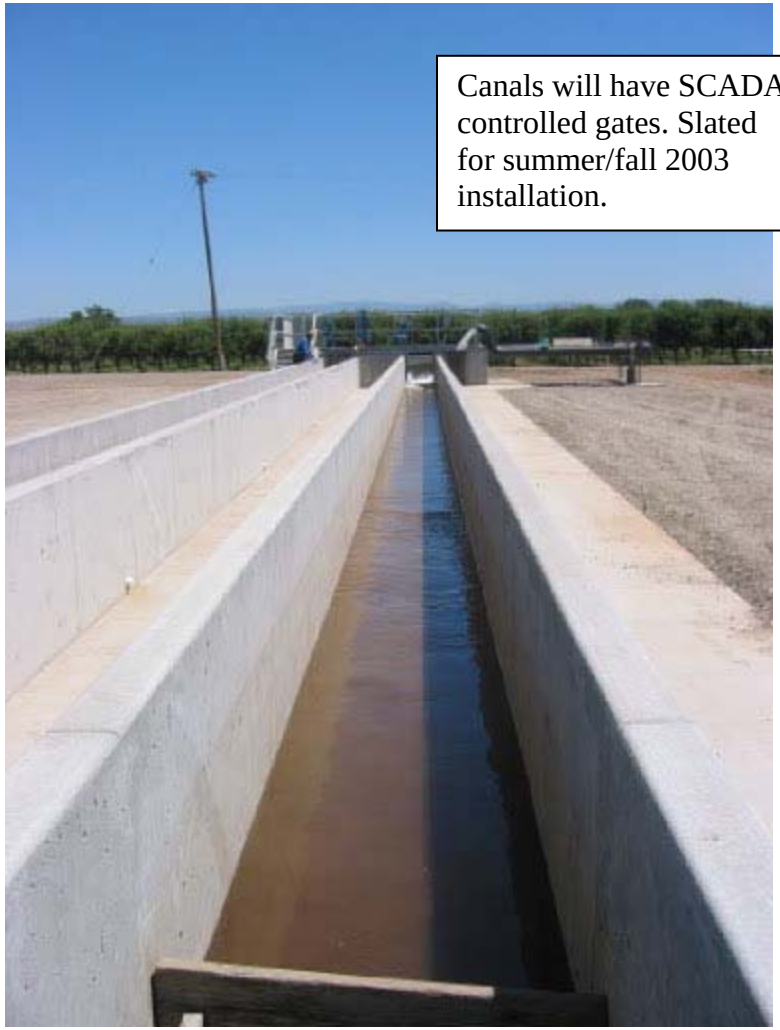
The next set of pictures detail the new pump/canal component of the irrigation training center. It was this component that the APEP helped to fund.

Placard located on the pump/canal structure.



Water pumped from sump through piping shown here and to canals.

Flow meters located in each pipe.



Canals will have SCADA controlled gates. Slated for summer/fall 2003 installation.

This is the electric panel at the pump/canal site. The meters are time-of-use meters, donated by PG&E. Next to this panel are outlets for the VFD and SCADA controls. These controls are planned to be installed in the summer or fall of 2003.

N Quarterly Verification Memos

August 4, 2003

MEMO

To: Pete Canessa, APEP Program Manager

From: Mary Sutter, Equipoise Consulting Inc.

Re: 2nd Quarter 2003 Verification

This memorandum summarizes Equipoise Consulting's (Equipoise) review of specific tables requested from the Agricultural Pump Efficiency Program (APEP) database. This data assessment is intended to serve two functions. First, it forms a validation of APEP's progress toward attaining its program goals. Second, it allows Equipoise to review the data to assure itself that the data needed for the eventual project evaluation is being collected and entered into the program database. The latter assessment also allows Equipoise to identify, for APEP's benefit, areas of the database that may require attention.

This document covers the two components of the APEP (pump tests and pump repairs). Each component used a sample of the population for verification purposes. The calculation of the sample size is presented first, followed by the method used in the verification, and then the results of the pump test component and the pump repair component.

1.1 Sample Size Determination

Equipoise pulled a sample of records for verification purposes. The sample was pulled using the following assumptions:

- Results of verification would be accurate at the 95th percentile
- Expected percent of valid occurrences in the population set to 90% (conservative value)
- Finite population correction factor used

The following algorithms were used to calculate the sample:

$$nsample = \frac{t^2 * p * (1 - p)}{d^2} \quad (1)$$

$$nfinite = \frac{nsample}{\left(1 + \frac{nsample}{N}\right)} \quad (2)$$

where:

t	=	1.645 (95% confidence level for a one-tailed t-test with infinite degrees of freedom)
p	=	expected percent of valid occurrences in the population (0.9)
d	=	desired level of accuracy (0.05)
N	=	population size
nsample	=	required sample size without the finite population correction
nfinite	=	required sample with finite population correction

1.2 Verification Method

All records in the tables with the pump test or pump repair data were provided a random value. The records in each of the two tables fell into the sample frame as determined by the finite population correction value were verified.

For the sampled records, Equipoise assessed the total number of cells within each table that contained data, provided a subjective indicator of the importance of the data for both program and evaluation purposes, and subjective comments on the data populating the cells for each variable. An importance level of one (1) indicates that we feel that correct population of these cells is key to either evaluating the project or to documenting the program impacts. An importance level of two (2) indicates that these cells could be key to evaluating or documenting the program, but that it is impossible to tell based on the population of the database whether the cells in the database should be populated. An importance level of three (3) is a variable that we consider to be irrelevant for evaluating the program or documenting the program impacts.

Once the electronic verification of the data was completed, ten records from the sampled group were randomly selected for visual verification of hardcopy data. The pump tests used 4 items for visual verification: 1) invoice from the pump tester that is associated with this test, 2) a record with a signature of the recipient that indicated they received the test results, 3) a pictures of the test site, and 4) the site access agreement. The pump repair requested five items for visual verification: 1) application with the signature included, 2) paid invoice and notice of project completion, 3) pre-repair pump test, 4) post-repair pump test, and 5) payment authorization.

1.3 Pump Test Component Results

For the pump test portion of the data assessment, Equipoise reviewed the database tables named “APEPTests0715”. A query was used to pull the data from this table that corresponded to records that had the variable “date paid” before 7/1/03. This pulled all records from the beginning of the program to the end of the second quarter of 2003. These records were subject to sampling and electronic verification as described above.

This data, however, included multiple pump tests on a single pump. While these tests are listed as multiple tests, they are actually unique “runs” on the same pump conducted during one pump test. Therefore, to calculate the number of unique pump tests that occurred from the beginning of the program to 6/30/03, another query was written that pulled only records with a data paid before 7/1/03 AND with the “run” variable equal to

1. This removed any records that constituted multiple runs on the same pump from the count of pump tests.

Verification of hard copy data requested by Equipoise and received from the APEP was performed in the last week of July, 2003.

After requesting hardcopy and going through the verification exercise, it became apparent that we had been unable to properly sort through the current records to obtain the number of tests that had been reimbursed through the end of the second quarter, 2003. According to the APEP, valid records will have a "1" in the "manual reimbursed" field or a value greater than zero in the "reimbursed" field. The variable "manual reimbursed" was not in the table provided as it had not been completely filled in at the time Equipoise received data from the APEP. However, these two variables will be used in the 3rd quarter verification to obtain the number of verified pump tests.

Nevertheless, the verification that has taken place on the pump tests indicate that 100% of the total number of pump tests claimed have occurred. The database showed high levels of cell population for relevant variables. Variables that have missing data have been commented on. Certain variable meanings have been highlighted in yellow to signify that we were unsure of the correct meaning.

This memo provides a paper verification of the pump tests performed through the 2nd quarter of 2003. This is the agreed upon process from the research plan for independently verifying the pump tests performed by the APEP.

Exhibit 1– Pump Test Variable Populations and Comments

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
APEPTestID	APEP pump test ID	100%	1	
APEPTesterNum	APEP pump tester ID	0%	3	
DatePaid	Date pump test paid by APEP	100%	1	
MtrLoadNow	Motor load now	100%	2	
OPENow	OPE now	100%	2	
KwhAFNow	kWh/AF now	100%	2	
HPNow	Horsepower now	100%	2	
TDHNow	Total Dynamic Head now	100%	2	
PUC	Y/N on CPUC site???	100%	2	
PumpFieldTestID	Pump test field ID	100%	1	
SponsoringAgency	Agency sponsoring test	75%	2	
Tester	Tester name	100%	2	
TestDate	Date of pump test	100%	1	
CustomerID	Customer ID	100%	1	There may be an issue with this value as there are apparent customers with the same ID that do not appear related. Possible DB structure or merge issue.
PumpName	Name of pump	100%	1	There seems to be more than one place to put data that identifies the pump being tested. Pump name is too generic to ID the pump location. A single variable should

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
				be set as the pump location.
PumpAddress	Address of pump	37%	2	
PumpCity	City of pump	21%	2	
PumpState	Sate of pump	99%	2	
PumpZip	Zip of pump	19%	2	
PumpLongitude	Longitude of pump	85%	2	
PumpN	Degrees north longitude	85%	2	Longitude North
PumpLatitude	Latitude of pump	85%	2	This seems to be longitude values, not latitude
PumpW	Degrees west latitude	85%	2	Latitude West
CustomerType	Type of customer	100%	1	There are some cells with simply the letter "F". This needs to be updated to an appropriate customer type.
MotorMake	Make of motor	93%	2	
MeterNo	Meter number on pump	100%	1	
PowerCo	Utility providing power to	98%	1	

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
	pump			
MotorSN	Serial number of motor	42%	2	
PumpMake	Make of pump	89%	2	
DriveType	Type of drive on pump	99%	2	
RateSchedule	Rate schedule	86%	2	
MotorVolts	Motor voltage	99%	2	
PumpType	Pump type	100%	1	There is an "Other" pump type. What would that be?
WaterSource	Source of water	100%	1	
HP	Horsepower of motor	100%	1	
MotorAmps	Motor amperage	100%	2	
GearHeadMake	Make of gear head	3%	2	
MotorEfficiency	Motor efficiency	100%	2	
MeterConstant	Meter constant	100%	2	
MeterKh	Meter kh	100%	2	
AverageCost	Average cost of kWh	100%	2	
RPMatTachometer	RPM at tachomoter	100%	2	
RPMatGearHead	RPM at gear head	100%	2	
MeasureRPM	Measured RPM	100%	2	
Run	Which number test (run) this is on this pump	100%	1	

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
RunOf	Total runs on this pump	100%	1	
SWL		99%	2	
MeterDiskRevolutions	Number of meter disk revolutions	100%	2	
MeterDiskTime	Time of that number of disk revolutions	100%	2	
Volts12	Voltage across legs 1-2	100%	2	
Volts13	Voltage across legs 1-3	100%	2	
Volts23	Voltage across legs 2-3	100%	2	
PWL	??	100%	2	
Amps1	Amperage on leg 1	100%	2	
Amps2	Amperage on leg 2	100%	2	
Amps3	Amperage on leg 3	100%	2	
DischargePressure	Discharge pressure	100%	2	
PF	Power factor	100%	2	
PHGPM	??	100%	2	
CustomerGPM	Customer estimated GPM	99%	2	
GaugeCorrection	Gauge correction	100%	2	
RWL	??	100%	2	
Remarks1	Remarks on test	99%	2	
Remarks2	Remarks on test	68%	2	
Remarks3	Remarks on test	56%	2	

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
Remarks4	Remarks on test	45%	2	
Remarks5	Remarks on test	33%	2	
Remarks6	Remarks on test	16%	2	
Remarks7	Remarks on test	5%	2	
Remarks8	Remarks on test	0%	2	
Remarks9	Remarks on test	1%	2	
Remarks10	Remarks on test	0%	2	
StateWellNo	State well number	58%	2	
Acreage	Acreage at site	99%	2	
FarmType	Type of farm	99%	1	
IdealOPE	Ideal OPE on this pump	100%	1	There are some zeros in this cell.
SaidHours	Stated hours that pump runs	100%	2	
Crop	Stated crop that pump irrigates	100%	2	
WaterEndUse	End use of water pumped	99%	2	
TestSectionDiameter	Test section diameter	99%	2	
Notes	Notes on test	48%	2	
CustomerName	Customer name	100%	1	
CustomerAddress	Customer address	100%	1	
CustomerCity	Customer City	100%	1	
CustomerState	Customer State	100%	1	

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
CustomerZip	Customer Zip	100%	1	As the plan is to plot the pump test locations, a fully filled variable field is required. Customer Zip is planned for this use unless CIT feels a different variable would work better.
CustomerPhone	Customer Phone	98%	1	**Needs 100% for future survey.**
CustomerFax	Customer Fax	53%	2	
CustomerCell	Customer Cell phone	49%	2	
CustomerContact	Contact person for test	91%	1	**Needs 100% for future survey.**
TDHAfter	Total Dynamic Head after	100%	2	What is this after?
FLOWAfter	GPM after	100%	2	What is this after?
AFAfter	kWh/AF after	100%	2	What is this after?
HPAfter	Horsepower after	100%	2	What is this after?
DPAfter	????	100%	2	What is this after?
OtherLosses	Other losses	98%	2	
GaugeHeight	Height of gauge	100%	2	
PWLAfter	???	100%	2	What is this after?
OPEAfter	OPE after	100%	2	What is this after?
Location	Area of county (N, W, SW, etc)	47%	2	
County	County	47%	2	
AcreageServedByPump	Acreage served by pump	29%	2	
MeterType	Type of meter	54%	2	

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
AccountNum	Account number for this pump	36%	2	
Reimbursed	Amount reimbursed for test	85%	2	
Months	???	0%	2	
TestType	Type of test	0%	2	
PumpType2	???	0%	2	
ImpellerType	Impeller Type	0%	2	
PumpUse	Use of Pump	0%	2	
TOU	Time of Use meter	100%	2	This is all zeros
Quality	Quality of test	0%	2	
Note	Notes on test	0%	2	
GasCompany	Y/N on SoCalGas???	0%	2	
kWDirect	??	47%	2	
CEC	Y/N on CEC test???	100%	1	

1.4 Pump Repair Component Results

For the pump repair portion of the data assessment, Equipoise reviewed the database table named "tblAPEPProjects" in the database APEPMain.MDB. Verification of hard copy data was performed during the last week of July, 2003. All projects are considered verified.

Exhibit 2
Results for 2nd Quarter Verification

Population (Records)	Sample Size (Records)	Percent of Records Verified	Projects in Sample	Projects in Population
19	16	100%	16	19

Equipoise looked closely at the variables to be used for calculation of energy impacts. The values shown in **Error! Reference source not found.** should be considered preliminary and subject to change in the final EM&V report. However, they are included here to provide sense of whether the program is making appropriate progress towards its goals.

Exhibit 3
Estimated kWh Impact through 2nd Quarter Verification, 2003

Service Utility	Program Goal (kWh)	kWh Impact through 2nd Quarter	Percent of Goal
PG&E	8,150,625	1,317,321	16%
SCE	2,362,500	0	0%
SDG&E	504,000	281,338	55%
SoCalGas	0	0	NA
Total	**11,017,125**	**1,598,657**	**14.5%**

Exhibit 4
Estimated Therm Impact through 2nd Quarter Verification, 2003

Service Utility	Program Goal (therm)	Therm Impact through 2nd Quarter	Percent of Goal
PG&E	42,188	0	0%
SCE	0	0	NA
SDG&E	9,000	0	0%
SoCalGas	78,750	0	0%
Total	**129,938**	**0**	**0%**

The results of this assessment are presented in below in Exhibit 5. This table showed a high level of cell population with a few comments provided for specific variables.

As stated previously, this memo provides a paper verification of the program installations through the 2nd quarter of 2003. This is the agreed upon process from the research plan for independently verifying the pump repairs performed by the APEP.

Exhibit 5– Pump Repair Variables and Comments

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
Record	Auto ID	100%	3	
APEPNumber	Application number	100%	1	
InDateTime	Date and time received	100%	2	
InBy	How delivered, 1 US mail, 2 FedEx, 3-Fax, 4-hand	100%	2	
Utility	1-PG&E, 2-SCE, 3-SCG, 4-SDGE	100%	1	
Meter	Meter Number	100%	1	
Account	Account number	100%	1	
BillingName	Name on billing	100%	1	
BusinessName	Business Name	100%	1	
ContactName	Contact Name	100%	1	
BusPhone	Business Phone	100%	1	
BusFax	Business Fax	100%	2	
BusAddress1	Business Address	100%	2	
BusAddress2	Business Address 2	0%	2	
BusCity	Business City	100%	2	
BusSt	Business State	100%	2	
BusZip	Business Zip	100%	2	
PumpLocation	Location of repaired pump	88%	1	This should be 100%

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
				filled with relevant data
CheckTo	Person that check is written to	100%	1	
ChkPhone	Phone of check person	100%	1	
ChkFax	Fax of check person	94%	2	
ChkEmail	E-mail of check person	25%	2	
ChkAddress1	Address of where check went	100%	1	
ChkAddress2	Address2 of where check went	0%	1	OK
ChkCity	City where check went	100%	1	
ChkState	State where check went	100%	2	
ChkZip	Zip of where check went	100%	2	
ApplicantName	Name of Applicant	100%	1	
ApplicationDate	Date of application	100%	1	
FedTaxID	Federal Tax ID	94%	2	
FedTaxStatus	1-Ind; 2-Corp; 3-Non-Corp; 4-Partnsership; 5-Exempt	100%	2	
EstkWReduct	Estimate from applicant	100%	2	
EstProjCost	Estimated project cost	100%	2	
EstGrantbyProj	Estimated grant by project	100%	2	
EstGrantbykWh	Estimated grant by kWh	100%	2	
Category	1-Electric; 2-Gas	100%	1	

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
EvaluatedBy	Who evaluated the engineering	100%	2	
EvalComment	Comments on engineering evaluation	88%	2	
DecisionBy	Who decided	100%	2	
NoticeIncomplete	Notice of incomplete sent to applicant	0%	2	
NoticeConst	Notice of construction complete from applicant	94%	2	
AppCompleteDate	Date that application is complete and we decide to issue payment - invoices, 2nd pump test, etc.	100%	2	
ConstFinish	Date of project completion	0%	2	
ConstVerifiedBy	Who verified construction	50%	2	
ConstVerified	Date construction verified	50%	2	
ConstVerComment	Construction verification comment	50%	2	
CurrentStatus	1=rec/inreview; 2=reject-inelig; 3=reject-no savings; 4=accept; 5=incomplete; 6=withdrawn	100%	1	
Accepted	Y/N on acceptance	100%	2	
Incomplete	Y/N on incomplete	100%	2	
Rejected	Y/N on rejection	100%	2	
Withdrawn	Y/N on withdrawn	100%	2	
WithdrawDate	Withdraw date	0%	2	

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
DecisionDate	Decision Date	100%	2	
NoticToAppl	Notice sent to applicant	100%	2	
RejectComment	Comment on rejection	0%	2	
EstGrant	Grant estimated by Applicant	100%	1	
ContractGrant	Contracted grant	100%	1	
FirstPay	First payment amount	100%	1	
FirstPayDate	First payment date	100%	1	
LastPay	Last payment amount	81%	1	OK
LastPayDate	Last payment date	0%	1	OK
ActProjectCost	Actual project cost	100%	2	
NextContact	Date of next contact	44%	2	
NextReason	1=incomplete/data; 2=project complete?; 3=full verification; 4=other	100%	2	
ToDo	Next action for processing	0%	2	
Problem	What is holding up processing	0%	2	
PmpkWh12	12 months use	100%	1	
PmpkWhEst	1 = past, 2 = future	100%	1	
PmpHp	Pump Horsepower	100%	1	
PmpType	1 = well, 2 = hor cent, 3 = subm, 4 = short-cpl	100%	1	
PmpTest	1 = Yes, 2 = no	100%	1	

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
PmpTestByUs	1 = yes, 2 = No - one of Participating Pump Test Cos	100%	2	
PmpLag	Number of months after test	100%	2	
PmpGrntOpt	Number of grant option chosen	100%	2	
PmpSpeed	Pump Speed	100%	2	
PmpVolt	Pump voltage	100%	2	
PmpMotorEff	Pump motor efficiency	100%	2	
PmpRewind	Pump rewound?	100%	2	
PmpReTimes	How many time rewound	100%	2	
PmpVFD	VFD in place	100%	2	
PmpImpeller	Impeller type 0 - unknown; 1-axial; 2-semi; 3-closed	100%	2	
PmpUse	use- 1-well; 2-human; 3-booster; 4-low-lift; 5-tailwater; 6-other; 0 unknown	100%	1	
PmpOPENow	OPE now	100%	1	
PmpOPEAfter	OPE after repair	100%	1	
PmpkWhNow	kWh/AF now	100%	1	
PmpkWhAfter	kWh/AF after repair	100%	1	
PmpREMoto	Replace motor	100%	2	
PmpReRe	Rewind motor	100%	2	

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
PmpBear	Replace bearings	100%	2	
PmpImpel	Impeller repair	100%	2	
PmpImpRE	Impeller replace	100%	2	
PmpPacking	Packing replace	100%	2	
Pmptrim	Impeller trim	100%	2	
PmpBowl	Bowl repair	100%	2	
PmpBowlreplac	Bowl replacement	100%	2	
PmpBowlwhat	Bowl replaced with what	88%	2	
PmpAdd	Added pump stages	100%	2	
PmpRemove	Removed pump stages	100%	2	
PmpCol	Increased pump column	100%	2	
PmpPiping	Pump piping	100%	2	
PmpWell	Cleaning well	100%	2	
PmpOther	Other oump repair	56%	2	
PmpReMotwhat	Replacement motor desribed	19%	2	
PmpImpelWhat	Replacement impeller described	69%	2	
PmpPreTest	Y/N on Pre repair test submitted	100%	1	
PmpPostTest	Y/N on Post repair test submitted	100%	1	
PmpCompany	Who did the work on the repair	100%	2	

Variable	Meaning	Percent Filled	Importance	Equipoise Comment
FarmType	Type of farm	100%	2	
AcresFarmed	Acres farmed	100%	2	
Flowmeter	Y/N on flowmeter	100%	2	
FlowType	Type of flowmeter	100%	2	
EstProjComplete	Estimated date of project completion	100%	3	

October 21, 2003

MEMO

To: Pete Canessa, APEP Program Manager

From: Mary Sutter, Equipoise Consulting Inc.

Re: 3rd Quarter 2003 Verification

This memorandum summarizes Equipoise Consulting's (Equipoise) review of specific tables requested from the Agricultural Pump Efficiency Program (APEP) database. This data assessment is intended to serve two functions. First, it forms a validation of APEP's progress toward attaining its program goals. Second, it allows Equipoise to review the data to assure itself that the data needed for the eventual project evaluation is being collected and entered into the program database. The latter assessment also allows Equipoise to identify, for APEP's benefit, areas of the database that may require attention.

This document covers the two components of the APEP (pump tests and pump repairs). Each component used a sample of the population for verification purposes. The calculation of the sample size is presented first, followed by the method used in the verification, and then the results of the pump test component and the pump repair component.

1.5 Summary of Verification Results for 3rd Quarter, 2003

Component	Original		Percent of Records Verified	Verified	
	Population	Sample Size		Sample	Population

	(Records)	**(Records)**			
Pump Tests	2,314	94	100%	94	2,314
Pump Repairs	24	19	100%	19	24

1.6 Sample Size Determination

Equipoise pulled a sample of records for verification purposes. The sample was pulled using the following assumptions:

- Results of verification would be accurate at the 95th percentile
- Expected percent of valid occurrences in the population set to 90% (conservative value)
- Finite population correction factor used

The following algorithms were used to calculate the sample:

$$nsample = \frac{t^2 * p * (1 - p)}{d^2} \quad (1)$$

$$nfinite = \frac{nsample}{\left(1 + \frac{nsample}{N}\right)} \quad (2)$$

where:

t	=	1.645 (95% confidence level for a one-tailed t-test with infinite degrees of freedom)
p	=	expected percent of valid occurrences in the population (0.9)
d	=	desired level of accuracy (0.05)
N	=	population size
nsample	=	required sample size without the finite population correction
nfinite	=	required sample with finite population correction

1.7 Verification Method

All records in the tables with the pump test or pump repair data were provided a random value. The records in each of the two tables fell into the sample frame as determined by the finite population correction value were verified.

For the sampled records, Equipoise assessed the total number of cells within each table that contained data, provided a subjective indicator of the importance of the data for both program and evaluation purposes, and subjective comments on the data populating the cells for each variable. An importance level of one (1) indicates that we feel that correct population of these cells is key to either evaluating the project or to documenting the program impacts. An importance level of two (2) indicates that these cells could be key to evaluating or documenting the program, but that it is impossible to tell based on the population of the database whether the cells in the database should be populated. An importance level of three (3) is a variable that we consider to be irrelevant for evaluating the program or documenting the program impacts.

Once the electronic verification of the data was completed, ten records from the sampled group were randomly selected for visual verification of hardcopy data. The pump tests used 4 items for visual verification: 1) invoice from the pump tester that is associated with this test, 2) a record with a signature of the recipient that indicated they received the test results, 3) a pictures of the test site, and 4) the site access agreement. The pump repair requested five items for visual verification: 1) application with the signature included, 2) paid invoice and notice of project completion, 3) pre-repair pump test, 4) post-repair pump test, and 5) payment authorization.

1.8 Pump Test Component Results

For the pump test portion of the data assessment, Equipoise reviewed the database tables named “tblAPEPPump Tests” in CITTablesEMVQ32003.MDB. A query was used to pull the data from this table that corresponded to records that had the variable “date paid” equal to or after 7/1/03 and before 10/1/03. These records were subject to sampling and electronic verification as described above.

This data, however, included multiple pump tests on a single pump. While these tests are listed as multiple tests, they are actually unique “runs” on the same pump conducted during one pump test. The program only pays for a single run per tested pump. Therefore, to calculate the number of unique pump tests that occurred (and were paid for) during the period in question, the query mentioned previously was written so that it pulled only records with relevant dates AND with the “reimburse” variable greater than zero OR with the relevant dates AND the “manualreim” value equal to 1. This narrowed the records to only those tests that had been paid for by the program.

Verification of hard copy data requested by Equipoise and received from the APEP was performed in the third week of October, 2003.

The verification on the pump tests indicate that 100% of the total number of pump tests claimed have occurred. The database showed high levels of cell population for relevant variables. Variables that have missing data have been commented on. Certain variable meanings have been highlighted in yellow to signify that we were unsure of the correct meaning.

This memo provides a paper verification of the pump tests performed in the 3rd quarter of 2003. This is the agreed upon process from the research plan for independently verifying the pump tests performed by the APEP.

Exhibit 6– Pump Test Variable Populations and Comments

Variable	Meaning	Percent Filled	Importance	Comment
APEPTestID	APEP pump test ID	100%	1	
APEPTesterNum	APEP pump tester ID	100%	3	
DatePaid	Date pump test paid by APEP	100%	1	
APEPPONum				
MtrLoadNow	Motor load now	100%	2	
OPENow	OPE now	100%	2	
KwhAFNow	kWh/AF now	100%	2	
HPNow	Horsepower now	100%	2	
TDHNow	Total Dynamic Head now	100%	2	
PUC	Y/N on CPUC site???	100%	2	
PumpFieldTestID	Pump test field ID	100%	1	
SponsoringAgency	Agency sponsoring test	89%	2	
Tester	Tester name	100%	2	
TestDate	Date of pump test	100%	1	
CustomerID	Customer ID	100%	1	
PumpName	Name of pump	100%	1	
PumpAddress	Address of pump	45%	2	

Variable	Meaning	Percent Filled	Importance	Comment
PumpCity	City of pump	23%	2	
PumpState	Sate of pump	100%	2	
PumpZip	Zip of pump	21%	2	
PumpLongitude	Longitude of pump	100%	2	
PumpN	Degrees north longitude	100%	2	
PumpLatitude	Latitude of pump	100%	2	
PumpW	Degrees west latitude	100%	2	
CustomerType	Type of customer	100%	1	There are some cells with simply the letter "F". This needs to be updated to an appropriate customer type.
MotorMake	Make of motor	84%	2	
MeterNo	Meter number on pump	100%	1	
PowerCo	Utility providing power to pump	100%	1	
MotorSN	Serial number of motor	33%	2	
PumpMake	Make of pump	81%	2	
DriveType	Type of drive on pump	100%	2	
RateSchedule	Rate schedule	88%	2	
MotorVolts	Motor voltage	99%	2	
PumpType	Pump type	100%	1	There are a few pump types set as "Well". Should they be

Variable	Meaning	Percent Filled	Importance	Comment
				considered "Turbine"?
WaterSource	Source of water	100%	1	There is a variable set to "Other" here. What would that be?
HP	Horsepower of motor	100%	1	
MotorAmps	Motor amperage	99%	2	
GearHeadMake	Make of gear head	6%	2	
MotorEfficiency	Motor efficiency	100%	2	
MeterConstant	Meter constant	100%	2	
MeterKh	Meter kh	100%	2	
AverageCost	Average cost of kWh	100%	2	
RPMatTachometer	RPM at tachomoter	100%	2	
RPMatGearHead	RPM at gear head	100%	2	
MeasureRPM	Measured RPM	100%	2	
Run	Which number test (run) this is on this pump	100%	1	
RunOf	Total runs on this pump	100%	1	
SWL		100%	2	
MeterDiskRevolutions	Number of meter disk revolutions	100%	2	
MeterDiskTime	Time of that number of	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
	disk revolutions			
Volts12	Voltage across legs 1-2	100%	2	
Volts13	Voltage across legs 1-3	100%	2	
Volts23	Voltage across legs 2-3	100%	2	
PWL	??	100%	2	
Amps1	Amperage on leg 1	100%	2	
Amps2	Amperage on leg 2	100%	2	
Amps3	Amperage on leg 3	100%	2	
DischargePressure	Discharge pressure	100%	2	
PF	Power factor	100%	2	
PHGPM	??	100%	2	
CustomerGPM	Customer estimated GPM	100%	2	
GaugeCorrection	Gauge correction	100%	2	
RWL	??	100%	2	
Remarks1	Remarks on test	99%	2	
Remarks2	Remarks on test	48%	2	
Remarks3	Remarks on test	64%	2	
Remarks4	Remarks on test	29%	2	
Remarks5	Remarks on test	12%	2	
Remarks6	Remarks on test	4%	2	

Variable	Meaning	Percent Filled	Importance	Comment
Remarks7	Remarks on test	2%	2	
Remarks8	Remarks on test	0%	2	
Remarks9	Remarks on test	0%	2	
Remarks10	Remarks on test	0%	2	
StateWellNo	State well number	73%	2	
Acreage	Acreage at site	100%	2	
FarmType	Type of farm	95%	1	
IdealOPE	Ideal OPE on this pump	100%	1	There are some zeros in this cell.
SaidHours	Stated hours that pump runs	100%	2	
Crop	Stated crop that pump irrigates	94%	2	
WaterEndUse	End use of water pumped	100%	2	
TestSectionDiameter	Test section diameter	100%	2	
Notes	Notes on test	94%	2	
CustomerName	Customer name	100%	1	
CustomerAddress	Customer address	100%	1	
CustomerCity	Customer City	100%	1	
CustomerState	Customer State	100%	1	
CustomerZip	Customer Zip	100%	1	

Variable	Meaning	Percent Filled	Importance	Comment
CustomerPhone	Customer Phone	98%	1	**Needs 100% for future survey.**
CustomerFax	Customer Fax	35%	2	
CustomerCell	Customer Cell phone	46%	2	
CustomerContact	Contact person for test	98%	1	**Needs 100% for future survey.**
TDHAfter	Total Dynamic Head after	100%	2	What is this after?
FLOWAfter	GPM after	100%	2	What is this after?
AFAfter	kWh/AF after	100%	2	What is this after?
HPAfter	Horsepower after	100%	2	What is this after?
DPAfter	????	100%	2	What is this after?
OtherLosses	Other losses	100%	2	
GaugeHeight	Height of gauge	100%	2	
PWLAfter	???	100%	2	What is this after?
OPEAfter	OPE after	100%	2	What is this after?
Location	Area of county (N, W, SW, etc)	50%	2	
County	County	56%	2	
AcreageServedByPump	Acreage served by pump	33%	2	
MeterType	Type of meter	82%	2	
AccountNum	Account number for this pump	77%	2	

Variable	Meaning	Percent Filled	Importance	Comment
Reimbursed	Amount reimbursed for test	100%	2	
Months	???	0%	2	
TestType	Type of test	0%	2	
PumpType2	???	0%	2	
ImpellerType	Impeller Type	0%	2	
PumpUse	Use of Pump	0%	2	
TOU	Time of Use meter	100%	2	This is all zeros
Quality	Quality of test	0%	2	
Note	Notes on test	0%	2	
GasCompany	Y/N on SoCalGas???	0%	2	
kWDirect	??	100%	2	
CEC	Y/N on CEC test???	100%	1	

1.9 Pump Repair Component Results

For the pump repair portion of the data assessment, Equipoise reviewed the database table named "tblAPEPProjects" in the database in CITTablesEMVQ32003.MDB. Verification of hard copy data was performed during the third week of October, 2003. All projects are considered verified.

Exhibit 7
Results for 3rd Quarter Verification, 2003

Population (Records)	Sample Size (Records)	Percent of Records Verified	Projects in Sample	Projects in Population
24	19	100%	19	24

Equipoise looked closely at the variables to be used for calculation of energy impacts. The values shown in **Error! Reference source not found.** should be considered preliminary and subject to change in the final EM&V report. However, they are included here to provide sense of whether the program is making appropriate progress towards its goals.

Exhibit 8
Estimated kWh Impact through 3rd Quarter Verification, 2003

Service Utility	Program Goal (kWh)	kWh Impact through 3rd Quarter	Percent of Goal
PG&E	8,150,625	2,889,519	35%
SCE	2,362,500	11,586	0.5%
SDG&E	504,000	494,095	98%
SoCalGas	0	0	NA
Total	**11,017,125**	**3,395,198**	**31%**

Exhibit 9
Estimated Therm Impact through 3rd Quarter Verification, 2003

Service Utility	Program Goal (therm)	Therm Impact through 2nd Quarter	Percent of Goal
PG&E	42,188	0	0%
SCE	0	0	NA
SDG&E	9,000	0	0%
SoCalGas	78,750	11,000	14%
Total	**129,938**	**11,000**	**8%**

The results of the table assessment are presented in below in Exhibit 5. This table showed a high level of cell population with a few comments provided for specific variables.

As stated previously, this memo provides a paper verification of the program installations through the 3rd quarter of 2003. This is the agreed upon process from the research plan for independently verifying the pump repairs performed by the APEP.

Exhibit 10– Pump Repair Variables and Comments

Variable	Meaning	Percent Filled	Importance	Comment
Record	Auto ID	100%	3	
APEPNumber	Application number	100%	1	
InDateTime	Date and time received	100%	2	
InBy	How delivered, 1 US mail, 2 FedEx, 3-Fax, 4-hand	100%	2	
Utility	1-PG&E, 2-SCE, 3-SCG, 4-SDGE	100%	1	
Meter	Meter Number	100%	1	
Account	Account number	100%	1	
BillingName	Name on billing	100%	1	
BusinessName	Business Name	100%	1	
ContactName	Contact Name	100%	1	
BusPhone	Business Phone	100%	1	
BusFax	Business Fax	74%	2	
BusAddress1	Business Address	100%	2	
BusAddress2	Business Address 2	0%	2	
BusCity	Business City	100%	2	
BusSt	Business State	100%	2	
BusZip	Business Zip	100%	2	
PumpLocation	Location of repaired pump	100%	1	

Variable	Meaning	Percent Filled	Importance	Comment
CheckTo	Person that check is written to	100%	1	
ChkPhone	Phone of check person	100%	1	
ChkFax	Fax of check person	74%	2	
ChkEmail	E-mail of check person	47%	2	
ChkAddress1	Address of where check went	100%	1	
ChkAddress2	Address2 of where check went	0%	1	OK
ChkCity	City where check went	100%	1	
ChkState	State where check went	100%	2	
ChkZip	Zip of where check went	100%	2	
ApplicantName	Name of Applicant	100%	1	
ApplicationDate	Date of application	100%	1	
FedTaxID	Federal Tax ID	100%	2	
FedTaxStatus	1-Ind; 2-Corp; 3-Non-Corp; 4-Partnsership; 5-Exempt	100%	2	
EstkWReduct	Estimate from applicant	100%	2	
EstProjCost	Estimated project cost	100%	2	
EstGrantbyProj	Estimated grant by project	100%	2	
EstGrantbykWh	Estimated grant by kWh	100%	2	
Category	1-Electric; 2-Gas	100%	1	
EvaluatedBy	Who evaluated the engineering	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
EvalComment	Comments on engineering evaluation	53%	2	
DecisionBy	Who decided	100%	2	
NoticeIncomplete	Notice of incomplete sent to applicant	11%	2	
NoticeConst	Notice of construction complete from applicant	100%	2	
AppCompleteDate	Date that application is complete and we decide to issue payment - invoices, 2nd pump test, etc.	100%	2	
ConstFinish	Date of project completion	0%	2	
ConstVerifiedBy	Who verified construction	100%	2	
ConstVerified	Date construction verified	100%	2	
ConstVerComment	Construction verification comment	0%	2	
CurrentStatus	1=rec/inreview; 2=reject-inelig; 3=reject-no savings; 4=accept; 5=incomplete; 6=withdrawn	100%	1	
Accepted	Y/N on acceptance	100%	2	
Incomplete	Y/N on incomplete	100%	2	
Rejected	Y/N on rejection	100%	2	
Withdrawn	Y/N on withdrawn	100%	2	
WithdrawDate	Withdraw date	0%	2	
DecisionDate	Decision Date	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
NoticToAppl	Notice sent to applicant	100%	2	
RejectComment	Comment on rejection	0%	2	
EstGrant	Grant estimated by Applicant	100%	1	
ContractGrant	Contracted grant	100%	1	
FirstPay	First payment amount	100%	1	
FirstPayDate	First payment date	100%	1	
LastPay	Last payment amount	89%	1	OK
LastPayDate	Last payment date	0%	1	OK
ActProjectCost	Actual project cost	100%	2	
NextContact	Date of next contact	0%	2	
NextReason	1=incomplete/data; 2=project complete?; 3=full verification; 4=other	100%	2	
ToDo	Next action for processing	0%	2	
Problem	What is holding up processing	0%	2	
PmpkWh12	12 months use	100%	1	
PmpkWhEst	1 = past, 2 = future	100%	1	
PmpHp	Pump Horsepower	100%	1	
PmpType	1 = well, 2 = hor cent, 3 = subm, 4 = short-cpl	100%	1	
PmpTest	1 = Yes, 2 = no	100%	1	
PmpTestByUs	1 = yes, 2 = No - one of Participating Pump	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
	Test Cos			
PmpLag	Number of months after test	100%	2	
PmpGrntOpt	Number of grant option chosen	100%	2	
PmpSpeed	Pump Speed	100%	2	
PmpVolt	Pump voltage	100%	2	
PmpMotorEff	Pump motor efficiency	100%	2	
PmpRewind	Pump rewound?	100%	2	
PmpReTimes	How many time rewound	100%	2	
PmpVFD	VFD in place	100%	2	
PmpImpeller	Impeller type 0 - unknown; 1-axial; 2-semi; 3-closed	100%	2	
PmpUse	use- 1-well; 2-human; 3-booster; 4-low-lift; 5-tailwater; 6-other; 0 unknown	100%	1	
PmpOPENow	OPE now	100%	1	
PmpOPEAfter	OPE after repair	100%	1	
PmpkWhNow	kWh/AF now	100%	1	
PmpkWhAfter	kWh/AF after repair	100%	1	
PmpREMoto	Replace motor	100%	2	
PmpReRe	Rewind motor	100%	2	
PmpBear	Replace bearings	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
PmpImpel	Impeller repair	100%	2	
PmpImpRE	Impeller replace	100%	2	
PmpPacking	Packing replace	100%	2	
Pmptrim	Impeller trim	100%	2	
PmpBowl	Bowl repair	100%	2	
PmpBowlreplac	Bowl replacement	100%	2	
PmpBowlwhat	Bowl replaced with what	68%	2	
PmpAdd	Added pump stages	100%	2	
PmpRemove	Removed pump stages	100%	2	
PmpCol	Increased pump column	100%	2	
PmpPiping	Pump piping	100%	2	
PmpWell	Cleaning well	100%	2	
PmpOther	Other oump repair	21%	2	
PmpReMotwhat	Replacement motor desribed	21%	2	
PmpImpelWhat	Replacement impeller described	42%	2	
PmpPreTest	Y/N on Pre repair test submitted	100%	1	
PmpPostTest	Y/N on Post repair test submitted	100%	1	
PmpCompany	Who did the work on the repair	100%	2	
FarmType	Type of farm	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
AcresFarmed	Acres farmed	100%	2	
Flowmeter	Y/N on flowmeter	100%	2	
FlowType	Type of flowmeter	100%	2	
EstProjComplete	Estimated date of project completion	95%	3	

January 28, 2004

MEMO

To: Pete Canessa, APEP Program Manager

From: Mary Sutter, Equipoise Consulting Inc.

Re: 4th Quarter 2003 Verification

Summary

This memorandum summarizes Equipoise Consulting's (Equipoise) review of specific tables requested from the Agricultural Pump Efficiency Program (APEP) database. This data assessment is intended to serve two functions. First, it forms a validation of APEP's progress toward attaining its program goals. Second, it allows Equipoise to review the data to assure itself that the data needed for the eventual project evaluation is being collected and entered into the program database. The latter assessment also allows Equipoise to identify, for APEP's benefit, areas of the database that may require attention.

This document covers the two components of the APEP (pump tests and pump repairs). Each component used a sample of the population for verification purposes.

As is presented in Exhibit 11, the verification confirmed 100% of the sample records assessed.

Exhibit 11 - Summary of Verification Results for 4th Quarter, 2003

Component	Original		Percent of Records Verified	Verified	
	Population (Records)	Sample Size (Records)		Sample	Population
Pump Tests	411	79	100%	79	411
Pump Repairs	18	15	100%	15	18

Preliminary results indicate that, through the end of the fourth quarter, the program has achieved approximately 38% of its overall kWh goal and 8% of its overall therm goal.

Details of Assessment

The calculation of the sample size is presented first, followed by the method used in the verification, and then the results of the pump test component and the pump repair component.

1.10 Sample Size Determination

Equipoise pulled a sample of records for verification purposes. The sample was pulled using the following assumptions:

- Results of verification would be accurate at the 95th percentile
- Expected percent of valid occurrences in the population set to 90% (conservative value)
- Finite population correction factor used

The following algorithms were used to calculate the sample:

$$nsample = \frac{t^2 * p * (1 - p)}{d^2} \quad (1)$$

$$nfinite = \frac{nsample}{\left(1 + \frac{nsample}{N}\right)} \quad (2)$$

where:

t	=	1.645 (95% confidence level for a one-tailed t-test with infinite degrees of freedom)
p	=	expected percent of valid occurrences in the population (0.9)
d	=	desired level of accuracy (0.05)
N	=	population size
Nsample	=	required sample size without the finite population correction
Nfinite	=	required sample with finite population correction

1.11 Verification Method

For each table, all records with the pump test or pump repair data were provided a random value. The records in each of the two tables that fell into the sample frame, as determined by the finite population correction value, were verified.

For the sampled records, Equipoise assessed the total number of cells within each table that contained data, provided a subjective indicator of the importance of the data for both program and evaluation purposes, and subjective comments on the data populating the cells for each variable. An importance level of one (1) indicates that we feel that correct population of these cells is key to either evaluating the project or to documenting the program impacts. An importance level of two (2) indicates that these cells could be key to evaluating or documenting the program, but that it is impossible to tell based on the population of the database whether the cells in the database should be populated. An importance level of three (3) is a variable that we consider to be irrelevant for evaluating the program or documenting the program impacts.

Once the electronic verification of the data was completed, ten records from the sampled group were randomly selected for visual verification of hardcopy data. The visual verification for the pump tests used 4 items: 1) invoice from the pump tester that is associated with this test, 2) a record with a signature of the recipient that indicated they received the test results, 3) a picture of the test site, and 4) the site access agreement. The visual verification for the pump repair requested five items: 1) application with the signature included, 2) paid invoice and notice of project completion, 3) pre-repair pump test, 4) post-repair pump test, and 5) payment authorization.

1.12 Pump Test Component Results

For the pump test portion of the data assessment, Equipoise reviewed the database tables named "tblAPEPPump Tests" in CITTablesEMVQ42003.MDB. A query was used to pull the data from this table that corresponded to records that had the variable "date paid" equal to or after 10/1/03 and before 1/1/04. These records were subject to sampling and electronic verification as described above.

This data, however, included multiple pump tests on a single pump. While these tests are listed as multiple tests, they are actually unique "runs" on the same pump conducted during one pump test. The program only pays for a single run per tested pump. Therefore, to calculate the number of unique pump tests that occurred (and were paid for) during the period in question, the query mentioned previously was written so that it pulled only records with relevant dates AND with the "reimburse" variable greater than zero OR with the relevant dates AND the "manualreim" value equal to 1. This narrowed the records to only those tests that had been paid for by the program.

Verification of hard copy data requested by Equipoise and received from the APEP was performed in the fourth week of January, 2004.

The verification on the pump tests indicate that 100% of the total number of pump tests claimed have occurred. The database showed high levels of cell population for relevant variables. Variables that have missing data have been commented on. Certain variable meanings have been highlighted in yellow to signify that we were unsure of the correct meaning.

This memo provides a paper verification of the pump tests performed in the 4th quarter of 2003. This is the agreed upon process from the research plan for independently verifying the pump tests performed by the APEP.

Exhibit 12– Pump Test Variable Populations and Comments

Variable	Meaning	Percent Filled	Importance	Comment
APEPTestID	APEP pump test ID	100%	1	
APEPTesterNum	APEP pump tester ID	100%	3	
DatePaid	Date pump test paid by APEP	100%	1	
APEPPONum				
MtrLoadNow	Motor load now	100%	2	
OPENow	OPE now	100%	2	
KwhAFNow	kWh/AF now	100%	2	
HPNow	Horsepower now	100%	2	
TDHNow	Total Dynamic Head now	100%	2	
PUC	Y/N on CPUC site	100%	2	
PumpFieldTestID	Pump test field ID	100%	1	
SponsoringAgency	Agency sponsoring test	94%	2	
Tester	Tester name	100%	2	
TestDate	Date of pump test	100%	1	
CustomerID	Customer ID	100%	1	
PumpName	Name of pump	100%	1	
PumpAddress	Address of pump	81%	2	
PumpCity	City of pump	49%	2	
PumpState	Sate of pump	100%	2	
PumpZip	Zip of pump	46%	2	

Variable	Meaning	Percent Filled	Importance	Comment
PumpLongitude	Longitude of pump	99%	2	
PumpN	Degrees north longitude	99%	2	
PumpLatitude	Latitude of pump	99%	2	
PumpW	Degrees west latitude	99%	2	
CustomerType	Type of customer	99%	1	There are some cells with simply the letter "F". This needs to be updated to an appropriate customer type.
MotorMake	Make of motor	84%	2	
MeterNo	Meter number on pump	100%	1	
PowerCo	Utility providing power to pump	100%	1	
MotorSN	Serial number of motor	51%	2	
PumpMake	Make of pump	80%	2	
DriveType	Type of drive on pump	100%	2	
RateSchedule	Rate schedule	78%	2	
MotorVolts	Motor voltage	100%	2	
PumpType	Pump type	100%	1	There are a few pump types set as "Well". Should they be considered "Turbine"?
WaterSource	Source of water	100%	1	
HP	Horsepower of motor	100%	1	
MotorAmps	Motor amperage	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
GearHeadMake	Make of gear head	13%	2	
MotorEfficiency	Motor efficiency	100%	2	
MeterConstant	Meter constant	100%	2	
MeterKh	Meter kh	100%	2	
AverageCost	Average cost of kWh	100%	2	
RPMatTachometer	RPM at tachomoter	99%	2	
RPMatGearHead	RPM at gear head	100%	2	
MeasureRPM	Measured RPM	100%	2	
Run	Which number test (run) this is on this pump	100%	1	
RunOf	Total runs on this pump	100%	1	
SWL	Standing Water Depth	100%	2	
MeterDiskRevolutions	Number of meter disk revolutions	100%	2	
MeterDiskTime	Time of that number of disk revolutions	100%	2	
Volts12	Voltage across legs 1-2	100%	2	
Volts13	Voltage across legs 1-3	100%	2	
Volts23	Voltage across legs 2-3	100%	2	
PWL	??? Water Depth	100%	2	
Amps1	Amperage on leg 1	100%	2	
Amps2	Amperage on leg 2	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
Amps3	Amperage on leg 3	100%	2	
DischargePressure	Discharge pressure	100%	2	
PF	Power factor	100%	2	
PHGPM	Gallons per minute	100%	2	
CustomerGPM	Customer estimated GPM	100%	2	
GaugeCorrection	Gauge correction	100%	2	
RWL	Running Water Depth	100%	2	
Remarks1	Remarks on test	99%	2	
Remarks2	Remarks on test	33%	2	
Remarks3	Remarks on test	44%	2	
Remarks4	Remarks on test	25%	2	
Remarks5	Remarks on test	18%	2	
Remarks6	Remarks on test	13%	2	
Remarks7	Remarks on test	9%	2	
Remarks8	Remarks on test	3%	2	
Remarks9	Remarks on test	3%	2	
Remarks10	Remarks on test	0%	2	
StateWellNo	State well number	81%	2	
Acreage	Acreage at site	100%	2	
FarmType	Type of farm	92%	1	Should be 100% filled in
IdealOPE	Ideal OPE on this pump	100%	1	There are some zeros in this cell.

Variable	Meaning	Percent Filled	Importance	Comment
SaidHours	Stated hours that pump runs	100%	2	
Crop	Stated crop that pump irrigates	91%	2	
WaterEndUse	End use of water pumped	100%	2	
TestSectionDiameter	Test section diameter	100%	2	
Notes	Notes on test	97%	2	
CustomerName	Customer name	100%	1	
CustomerAddress	Customer address	100%	1	
CustomerCity	Customer City	100%	1	
CustomerState	Customer State	100%	1	
CustomerZip	Customer Zip	100%	1	
CustomerPhone	Customer Phone	97%	1	OK - have cell phone or fax number for those sites with blank values here.
CustomerFax	Customer Fax	22%	2	
CustomerCell	Customer Cell phone	35%	2	
CustomerContact	Contact person for test	97%	1	Should be 100% filled in
TDHAfter	Total Dynamic Head after	100%	2	
FLOWAfter	GPM after	100%	2	
AFAfter	kWh/AF after	100%	2	
HPAfter	Horsepower after	100%	2	
DPAfter	????	100%	2	
OtherLosses	Other losses	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
GaugeHeight	Height of gauge	100%	2	
PWLAfter	Pumping Water Level	100%	2	
OPEAfter	OPE after	100%	2	
Location	Area of county (N, W, SW, etc)	78%	2	
County	County	90%	2	
AcreageServedByPump	Acreage served by pump	28%	2	
MeterType	Type of meter	89%	2	
AccountNum	Account number for this pump	51%	2	
Reimbursed	Amount reimbursed for test	100%	2	
Months	???	0%	2	
TestType	Type of test	0%	2	
PumpType2	???	0%	2	
ImpellerType	Impeller Type	0%	2	
PumpUse	Use of Pump	0%	2	
TOU	Time of Use meter	100%	2	
Quality	Quality of test	0%	2	
Note	Notes on test	0%	2	
GasCompany	Y/N on SoCalGas???	0%	2	
kWDirect	??	100%	2	
CEC	Y/N on CEC test???	100%	1	

1.13 Pump Repair Component Results

For the pump repair portion of the data assessment, Equipoise reviewed the database table named "tblAPEPProjects" in the database in CITTablesEMVQ42003.MDB. Verification of hard copy data was performed during the fourth week of January, 2004. All projects are considered verified.

Exhibit 13
Results for 4th Quarter Verification, 2003

Population (Records)	Sample Size (Records)	Percent of Records Verified	Projects in Sample	Projects in Population
18	15	100%	15	18

Equipoise looked closely at the variables to be used for calculation of energy impacts. The values shown in Exhibit 14and Exhibit 15 should be considered preliminary and subject to change in the final EM&V report. However, they are included here to provide sense of the progress towards program goals.

Exhibit 14
Estimated kWh Impact through 4th Quarter Verification, 2003

Service Utility	Program Goal (kWh)	kWh Impact through 3rd Quarter 2003	kWh Impact in 4th Quarter 2003	kWh Impact through 4th Quarter 2003	Percent of Goal
PG&E	8,150,625	2,889,519	612,792	3,502,311	**43%**
SCE	2,362,500	11,586	24,087	35,673	**1.5%**
SDG&E	504,000	494,095	0	494,095	**98%**
SoCalGas	0	0	0	0	**NA**
Total	**11,017,125**	**3,395,200**	**636,878**	**4,032,079**	**37%**

Exhibit 15
Estimated Therm Impact through 4th Quarter Verification, 2003

Service Utility	Program Goal (therm)	Therm Impact through 4th Quarter 2003	Percent of Goal
PG&E	42,188	0	0%
SCE	0	0	NA
SDG&E	9,000	0	0%
SoCalGas	78,750	11,000	14%
Total	**129,938**	**11,000**	**8%**

The results of the data assessment for the tables reviewed are presented in below in 6. This table showed a high level of cell population with a few comments provided for specific variables.

As stated previously, this memo provides a paper verification of the program installations through the 4th quarter of 2003. This is the agreed upon process from the research plan for independently verifying the pump repairs performed by the APEP.

Exhibit 16– Pump Repair Variables and Comments

Variable	Meaning	Percent Filled	Importance	Comment
Record	Auto ID	100%	3	
APEPNumber	Application number	100%	1	
InDateTime	Date and time received	100%	2	
InBy	How delivered, 1 US mail, 2 FedEx, 3-Fax, 4-hand	100%	2	
Utility	1-PG&E, 2-SCE, 3-SCG, 4-SDGE	100%	1	
Meter	Meter Number	100%	1	
Account	Account number	100%	1	
BillingName	Name on billing	100%	1	
BusinessName	Business Name	100%	1	
ContactName	Contact Name	100%	1	
BusPhone	Business Phone	100%	1	
BusFax	Business Fax	87%	2	
BusAddress1	Business Address	100%	2	
BusAddress2	Business Address 2	0%	2	
BusCity	Business City	100%	2	
BusSt	Business State	100%	2	
BusZip	Business Zip	100%	2	
PumpLocation	Location of repaired pump	100%	1	

Variable	Meaning	Percent Filled	Importance	Comment
CheckTo	Person that check is written to	100%	1	
ChkPhone	Phone of check person	100%	1	
ChkFax	Fax of check person	80%	2	
ChkEmail	E-mail of check person	87%	2	
ChkAddress1	Address of where check went	100%	1	
ChkAddress2	Address2 of where check went	0%	1	OK
ChkCity	City where check went	100%	1	
ChkState	State where check went	100%	2	
ChkZip	Zip of where check went	100%	2	
ApplicantName	Name of Applicant	100%	1	
ApplicationDate	Date of application	100%	1	
FedTaxID	Federal Tax ID	100%	2	
FedTaxStatus	1-Ind; 2-Corp; 3-Non-Corp; 4-Partnsership; 5-Exempt	100%	2	
EstkWReduct	Estimate from applicant	100%	2	
EstProjCost	Estimated project cost	100%	2	
EstGrantbyProj	Estimated grant by project	100%	2	
EstGrantbykWh	Estimated grant by kWh	100%	2	
Category	1-Electric; 2-Gas	100%	1	
EvaluatedBy	Who evaluated the engineering	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
EvalComment	Comments on engineering evaluation	33%	2	
DecisionBy	Who decided	100%	2	
NoticeIncomplete	Notice of incomplete sent to applicant	7%	2	
NoticeConst	Notice of construction complete from applicant	100%	2	
AppCompleteDate	Date that application is complete and we decide to issue payment - invoices, 2nd pump test, etc.	100%	2	
ConstFinish	Date of project completion	0%	2	
ConstVerifiedBy	Who verified construction	93%	2	
ConstVerified	Date construction verified	87%	2	
ConstVerComment	Construction verification comment	0%	2	
CurrentStatus	1=rec/inreview; 2=reject-inelig; 3=reject-no savings; 4=accept; 5=incomplete; 6=withdrawn	100%	1	
Accepted	Y/N on acceptance	100%	2	
Incomplete	Y/N on incomplete	100%	2	
Rejected	Y/N on rejection	100%	2	
Withdrawn	Y/N on withdrawn	100%	2	
WithdrawDate	Withdraw date	0%	2	
DecisionDate	Decision Date	93%	2	

Variable	Meaning	Percent Filled	Importance	Comment
NoticToAppl	Notice sent to applicant	100%	2	
RejectComment	Comment on rejection	0%	2	
EstGrant	Grant estimated by Applicant	100%	1	
ContractGrant	Contracted grant	100%	1	
FirstPay	First payment amount	100%	1	
FirstPayDate	First payment date	100%	1	
LastPay	Last payment amount	100%	1	
LastPayDate	Last payment date	0%	1	OK
ActProjectCost	Actual project cost	100%	2	
NextContact	Date of next contact	0%	2	
NextReason	1=incomplete/data; 2=project complete?; 3=full verification; 4=other	100%	2	
ToDo	Next action for processing	0%	2	
Problem	What is holding up processing	0%	2	
PmpkWh12	12 months use	100%	1	
PmpkWhEst	1 = past, 2 = future	100%	1	
PmpHp	Pump Horsepower	100%	1	
PmpType	1 = well, 2 = hor cent, 3 = subm, 4 = short-cpl	100%	1	
PmpTest	1 = Yes, 2 = no	100%	1	
PmpTestByUs	1 = yes, 2 = No - one of Participating Pump	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
	Test Cos			
PmpLag	Number of months after test	100%	2	
PmpGrntOpt	Number of grant option chosen	100%	2	
PmpSpeed	Pump Speed	100%	2	
PmpVolt	Pump voltage	100%	2	
PmpMotorEff	Pump motor efficiency	100%	2	
PmpRewind	Pump rewound?	100%	2	
PmpReTimes	How many time rewound	100%	2	
PmpVFD	VFD in place	100%	2	
PmpImpeller	Impeller type 0 - unknown; 1-axial; 2-semi; 3-closed	100%	2	
PmpUse	use- 1-well; 2-human; 3-booster; 4-low-lift; 5-tailwater; 6-other; 0 unknown	100%	1	
PmpOPENow	OPE now	100%	1	
PmpOPEAfter	OPE after repair	100%	1	
PmpkWhNow	kWh/AF now	100%	1	
PmpkWhAfter	kWh/AF after repair	100%	1	
PmpREMoto	Replace motor	100%	2	
PmpReRe	Rewind motor	100%	2	
PmpBear	Replace bearings	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
PmpImpel	Impeller repair	100%	2	
PmpImpRE	Impeller replace	100%	2	
PmpPacking	Packing replace	100%	2	
Pmptrim	Impeller trim	100%	2	
PmpBowl	Bowl repair	100%	2	
PmpBowlreplac	Bowl replacement	100%	2	
PmpBowlwhat	Bowl replaced with what	47%	2	
PmpAdd	Added pump stages	100%	2	
PmpRemove	Removed pump stages	100%	2	
PmpCol	Increased pump column	100%	2	
PmpPiping	Pump piping	100%	2	
PmpWell	Cleaning well	100%	2	
PmpOther	Other oump repair	27%	2	
PmpReMotwhat	Replacement motor desribed	7%	2	
PmpImpelWhat	Replacement impeller described	13%	2	
PmpPreTest	Y/N on Pre repair test submitted	100%	1	
PmpPostTest	Y/N on Post repair test submitted	100%	1	
PmpCompany	Who did the work on the repair	100%	2	
FarmType	Type of farm	100%	2	

Variable	Meaning	Percent Filled	Importance	Comment
AcresFarmed	Acres farmed	100%	2	
Flowmeter	Y/N on flowmeter	100%	2	
FlowType	Type of flowmeter	100%	2	
EstProjComplete	Estimated date of project completion	100%	3	

O Process Analysis Details

- **APEP Staff Interviews**
- **Participant Survey Process Questions**
- **Pump Test/Repair Company Interviews**

APEP Staff Interviews

This section includes an overall summary of the findings from the interviews of the APEP staff. This summary is the result of analysis of the interviews of nine separate APEP staff that covered almost the entire spectrum of program operation. In order to maintain confidentiality for the individual respondents, the verbatim responses to each individual question have been retained in Equipoise Consulting, Incorporated's files.

Much but not all of the following has been incorporated in the body of report in sections addressing process analysis results. In that application in may have been reworded for continuity purposes.

Summary of APEP Staff Interview Findings

Program Implementation/Organization

All staff clearly understood their roles in the operation of the program. In general they had a good picture of the roles and responsibilities of other staff, and with two exceptions felt that the operation was adequately staffed to achieve the goals of the APEP program. Program management appear to have established good communications channels, using bi-weekly status meeting (that include a review of goals and progress toward them), email, and land and cellular phones. Virtually all staff agreed that the ramp up to field the program, while it had its fits and starts, went exceptionally well and succeeded in putting the program in place with all of its capabilities in an incredibly short time.

Program management seems to have done a good job of recruiting and placement of staff. Not only were they able to find people to fill the slots in a short period, but they appear to have done an excellent job of filling each job with people with the right skills and abilities to fill the responsibilities. As a result, staff moral is extremely high and they exhibit a "can do" attitude.

The two areas where staffing improvements/distribution of responsibilities seem to warrant improvement are inter connected. Several observations pointed to the overall program manager being over committed. This over commitment appears to be related to two primary factors, (1) the unanticipated level and complexity of monthly reporting responsibilities to the CPUC, and (2) in adequate staffing to support those reporting needs. The result was a consensus that the program manager was working extremely long hours and being less than available for some mid-level management tasks. This gap was filled by bringing in a good day-to-day manager, but still appears to have left the program manager over committed. Hiring a full time controller to handle the accounting and to support/handle the CPUC reporting would probably resolve much of this issue. It should be said that the program manager appears to have made sure that he was available to guide the technical part of the program, because these people generally agreed that he was appropriately available to them.

Training

The fielding of this program depended heavily upon staff with long-term experience in pumps and pumping. The program appears to have succeeded in hiring staff with such experience. This experience was then supplemented with in depth training seminars at the beginning of the program and, as needed as the program operated. The training generally covered program software, program procedures, and information on program objectives and goals. Operations manuals are posted on the program website for review. While training is generally perceived as good to excellent, one suggestion was by an Area Representative to supply them with interpersonal training to enhance interactions with the customer.

Program Goals

When asked all staff were able to state the overall program objective, and most were able to recite the specific numerical goals of the program. The program staff generally understood how the program goals were set, and felt consulted in setting them for the second round of funding. In addition, due to the bi-weekly meeting goal review, virtually all staff knew where the program stood in achieving the goals, where they were succeeding and where they were falling short. Each area manager, and each person responsible for fielding a program element understood their targets and were very aware of where they were in terms of meeting the goals for their area. In addition, they and other staff generally knew what corrective actions were being taken to achieve goals where the program was falling short.

Program Target Population

All staff queried about the target population identified, in one way or another, irrigated agricultural customers who were served by IOUs. Most seemed to agree that the program has targeted all sizes of customer, but one indicated that the program was now going after large customer because “that is where the savings potential is”. When asked about changes that they might suggest in the program several mentioned that the program was missing opportunities by not including golf courses, municipalities, and industrial sites. These responses may have resulted from this idea having been included in the 2004-05 proposal. Ideas for program improvement included:

- Improve timing of information to partners so that it coordinated with their publications schedules and promotion goals.
- Increase media mass marketing and press releases. While some felt that mass marketing doesn’t work on this population, some felt that it was part of the big picture that would eventually entice the customers to query the program for help.
- A couple felt that more effort should be put into forcing the IOUs to supply the lists of their customers so that the customer could be marketed directly. Apparently this had been suggested before, but the political obstacles were believed to be too large.

Program Promotion and Marketing

When asked about the most effective means of promoting the program, program staff named the wide variety of outreach methods used by the program, including the MEC, trade allies, mail, printed material, association meetings, seminars, trade shows, and the website. The general consensus was that the pump test as a means of demonstrating energy and dollar savings was the program feature that was most likely to get customers to participate in the pump repair program. The responses when asked which features tend to stop people from participating were much

more varied. They ranged from lack of knowledge (three responses), message too complicated (one response), economy down/ lack of funds/ incentive not large enough (three response), to distrust of government.

When asked about mass marketing, the interviewees acknowledged that the program used direct mail and billboards. When asked about mass media marketing 40% of the respondents stated that it doesn't work with this audience, however the other 60% stated that it helped the overall picture or that plans for were underway.

The program manager stated that no market research was conducted before the program was fielded, and that the program relied on the accumulated knowledge of the people involved. Give the disagreement on the usefulness of mass media marketing, and the seemingly belated plans to use it, it would appear that the program ought to ether try it in a limited area and assess its effectiveness or conduct market research to determine whether it is an effective tool in this market.

Program Delivery

A set of questions was asked of the personnel responsible for the delivery of the program. In addition the evaluation staff attended 12 separate seminars put on using the MEC and the fixed lab at Chico. Overall it was clear that the program had delivered all needed material into the hands of the people responsible for implementing the program. It had identified and hired skilled staff to field the program, and had trained those staff well in the program delivery. It had supported their efforts to field the program with well designed and implemented central support systems, including website tracking databases. The program management succeeded in motivating program delivery personnel and keeping them enthusiastic about the program. This was partially because they kept the program focused on the goals and aware of progress toward those goals through sound communication practices. Additionally the effort has been supported by the creation of program tracking databases that appear to be well managed, although the databases themselves were not assessed.

The fixed laboratories do not seem to get much attention from program staff. It would appear that these may be under utilized. The Fresno lab has yet to be constructed.

Pump Tests

The evaluation effort asked a series of question of the program staff responsible for the pump test and tracking of the results. Overall the program appears to have established a very well run pump test program. The pump testers were selected based on experience by a highly qualified person. Each pump tester was trained in the program software and procedures through a series of seminars at the beginning of the program, then the results of each and every pump test were run against a series of limit checks and the results were reviewed for reasonableness. The pumps being tested were check to be sure that they had not been tested in the past 12 months.

The area coordinators are reasonably sure that the economic results are being delivered and explained to the customers from their random interactions with customers. In addition the pump testers are required to deliver a signed form from the customer saying that they received the results of the pump test.

While it was unclear what percentage of the pump test results are being returned due to quality control issues, the percentage is said to be low. We recommend that the program should track the

percent that require quality control attention in order to track whether this is issue is truly minimized.

General Recommendations for Program Improvement

All interviewees were given the opportunity to identify any general areas where the program might be improved. The following suggestions evolved from this question.

- The program is planning to have 24 months between pump tests next time around. If there is a way to track or document other things that occur because of our efforts [spillover], we should do it because we think there should be savings there. It would also be good to document what "new" customers we are reaching that hadn't been reached before. I think we are reaching people not previously reached by the utility programs. We should possibly up the ante for the smaller customers to make it more worth their while. I have had several conversations with smaller pump owners who say the rebate isn't worth the effort.The project should have a full time Comptroller to assist in the reporting of the project.I would highly recommend that these programs be established for more than a yearly program. Need stability to get confidence of farmers. The economics are what drive it.

Participant Survey Process Questions

This section includes the question-by-question analysis results that were created in conducting the process analysis. Much but not all of this analysis has been presented in the process results sections of the body of the report. This appendix presents only the raw analysis findings, and while it does often postulate specific meanings for the results of each analysis, it does not expound on their meaning in the context of the results of other questions.

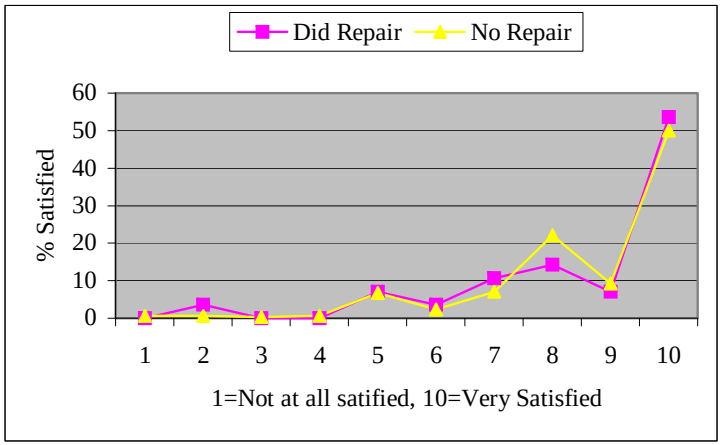
Q1 How learn about getting pumps tested/rep

	Did Repair	No Repair	Comment
	%	%	
Contacted by Program	3	10.5	
Trade publication	9.1	7.7	
Marketing by Trade Ally	30.3	17.9	More likely to make a repair if contacted by trade ally
APEP Seminar or demonstration (Mobile Lab)	0	1.5	
CIT/APEP Website	3	0.3	
Word of Mouth	3	9	
You contacted CIT/APEP by phone	3	2.5	
Through an Ag organization	6.1	10.2	
Other (specify)	39.4	38	Virtually all in the "irrigation professional" category, in both groups
Don't Know	3	2.5	
Total	99.9	100.1	
Total number of meaningful responses	33	324	

<Q3> How satisfied are you with the ways in which you found out about the Program? Please use a scale from 1 to 10, with 1 being not at all satisfied and 10 being very satisfied

		Did Repair Valid Percent	No Repair Valid Percent	
Valid	1	0	0.7	1 Not At All Satisfied
	2	3.6	0.7	
	3	0	0.3	
	4	0	0.7	
	5	7.1	6.8	
	6	3.6	2.4	
	7	10.7	7.1	
	8	14.3	22.1	
	9	7.1	9.2	
	10	53.6	50	10 Very Satisfied
	Total	100	100	
Valid Responses		29	294	
Mean Response		8.54	8.64	

Shows (1) very high level of satisfaction, (2) similar responses from repair and no repair groups



Q2 Preferred way to get new info

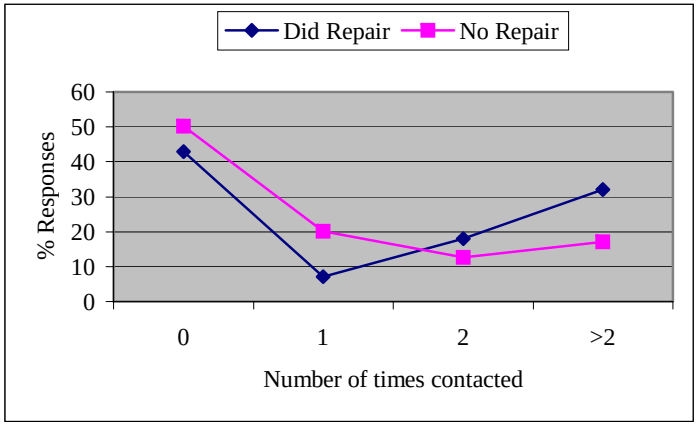
	Did Repair %	No Repair %	Comments
Phone Call	0	2.9	
Internet or email	16.2	13.5	67 - 78% prefer internet, email or printed material in mail
MAIL Printed Material (USPS)	62.2	53.2	Majority pefer mail
Training Workshop	0	1.3	
Trade Association Meeting/Presentation	8.1	7.7	
On-Site Visit (in person)	0	6.3	
OTHER SPECIFY	13.5	13.5	
DON'T KNOW	0	1.6	
Total	100	100	
Total number of meaningful responses	29	378	

<q4> How many times contacted in 2003 and 2004?

			Valid Percent	Valid Percent
			Did Repair	No Repair
Valid	Never	0	42.9	50.2
	Once	1	7.1	20.1
	Twice	2	17.9	12.6
	Several Times	>2	32.1	17.1
	Total		100	100
Valid Responses			28	293

Mean Response

It appears that repair group was contacted more often than non repair group. Looks like multiple contact is important



<q5> Did you receive printed material from the Program other than the PT results?

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Yes	57.1	47.1
	No	42.9	52.9
	Total	100	100
Valid Responses		28	92

Those who did repair said that they had received printed material from the program 10% more of the time than did those who didn't do a repair.

Q6 What info received besides PT results?

	Did Repair %	No Repair %	
Pamphlet	71.4	59.7	People getting pamphlets
Energy Calculator	23.8	25.8	
Other	4.8	9.4	Mostly PT, pamphlets, booklets
Don't Know	0.0	5.0	
Total	100.0	99.9	
Total number of meaningful responses	21	159	

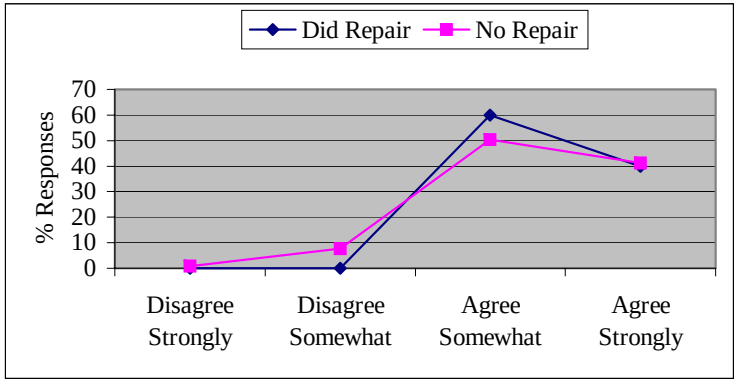
Q7 Where or from whom get extra info?

	Did Repair %	No Repair %	
Sent to the business/home after req	42.1	24.8	people who did repairs more proactive.
Sent to me by vendor or contractor	31.6	20.0	Requested material and sent by vendors 45-73%
Picked up at a seminar / event (Mobile lab)	5.3	8.8	
APEP Program Websit	0.0	0.8	
Other- SPECIFY	21.1	33.6	Mostly sent material by some trade allie
DON'T KNOW	0.0	12.0	
Total	100.1	100.0	
Total number of meaningful responses	19	125	

<Q8A> The information in the printed material was presented in an engaging format. Do you...

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	0.8
	Disagree Somewhat	0	7.6
	Agree Somewhat	60	50.4
	Agree Strongly	40	41.2
	Total	100	100
Valid Responses		15	119
Mean Response		3.4	3.32

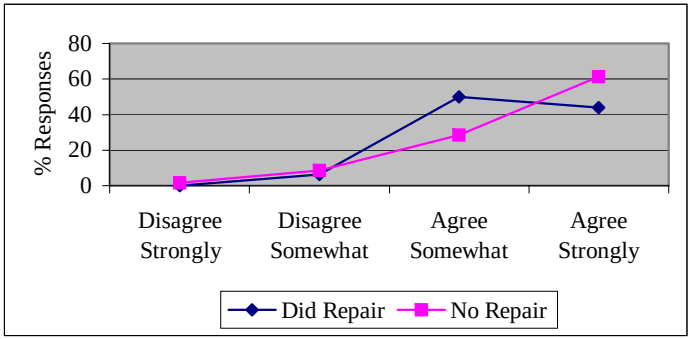
Similar responses from both



<Q8B> The information in the printed material was easy to understand.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	1.7
	Disagree Somewhat	6.3	8.4
	Agree Somewhat	50	28.6
	Agree Strongly	43.8	61.3
	Total	100	100
Valid Responses		16	119
Mean Response		3.38	3.5

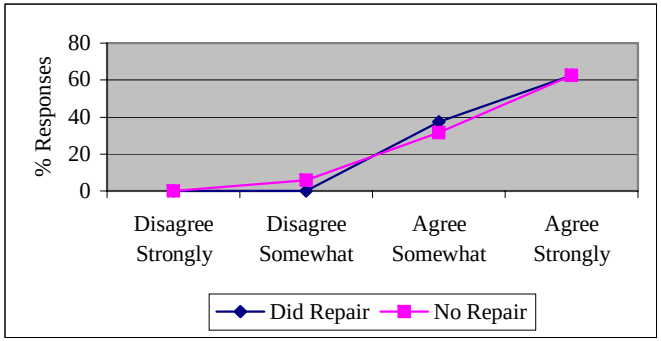
Similar responses, more that didn't repair agree strongly



<Q8C> The information in the printed material was useful.

		Valid Percent	Valid Percent
		Did Repair	No Repair
	Disagree Strongly	0	0
Valid	Disagree Somewhat	0	5.8
	Agree Somewhat	37.5	31.7
	Agree Strongly	62.5	62.5
	Total	100	100
Valid Responses		16	120
Mean Response		3.63	3.57

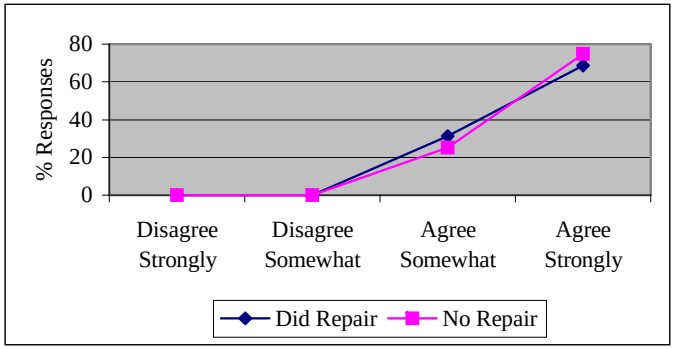
No decernable difference, both groups found the material useful



<Q8D> The information in the printed material was believable.

		Valid Percent	Valid Percent
		Did Repair	No Repair
	Disagree Strongly	0	0
	Disagree Somewhat	0	0
Valid	Agree Somewhat	31.3	25.2
	Agree Strongly	68.8	74.8
	Total	100	100
Valid Responses		16	119
Mean Response		3.69	3.75

No decernable difference, both groups found the material higly believable.



<Q8E> The information in the printed material positively affected my attitude toward energy efficiency.

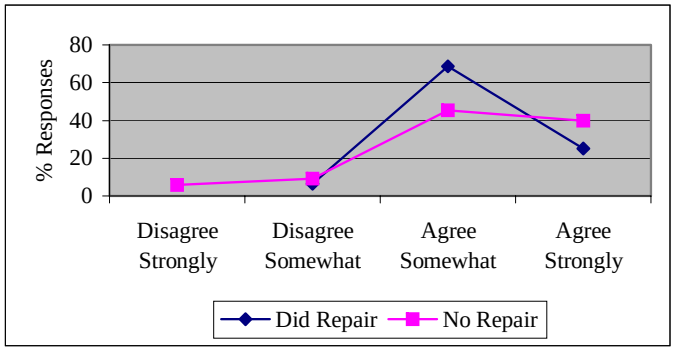
		Valid Percent	Valid Percent
		Did Repair	No Repair
	Disagree Strongly		
Valid	Disagree Somewhat		4.3
	Agree Somewhat	43.8	40.5
	Agree Strongly	56.3	55.2
	Total	100	100
Valid Responses		16	116
Mean Response		3.56	3.51

No decernable difference, both groups found the material positively affected attatude toward EE.

<Q8F> I learned a considerable amount about available energy efficiency options from reading the printed material.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly		5.8
	Disagree Somewhat	6.3	9.1
	Agree Somewhat	68.8	45.5
	Agree Strongly	25	39.7
	Total	100	100
Valid Responses		16	121
Mean Response		3.19	3.19

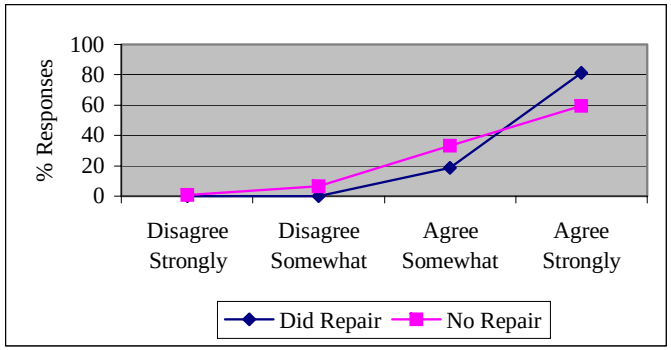
Customers somewhat agree that they learned about EE from reading printed mt.
Identical means.



<Q8G> The information in the printed material increased the likelihood that I will investigate energy efficiency options.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	0.8
	Disagree Somewhat	0	6.6
	Agree Somewhat	18.8	33.1
	Agree Strongly	81.3	59.5
	Total	100	100
Valid Responses		16	121
Mean Response		3.81	3.51

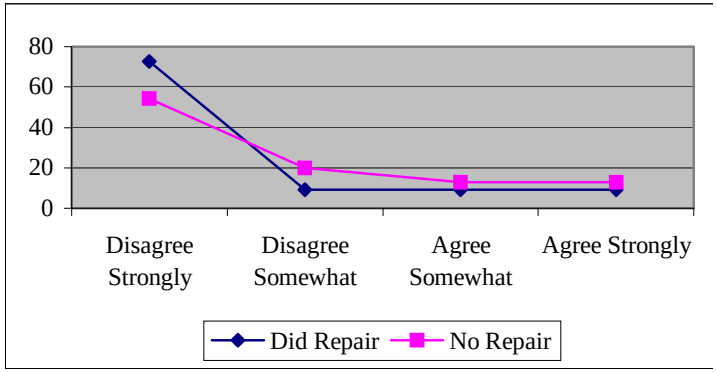
The group that did repairs showed a significantly (?) higher mean response, indicating that the printed material has increased the liklihood that they will investigate other EE options.



<Q8H> The information printed in Spanish was useful.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	72.7	54.3
	Disagree Somewhat	9.1	20
	Agree Somewhat	9.1	12.9
	Agree Strongly	9.1	12.9
	Total	100	100
Valid Responses		11	70
Mean Response		1.55	1.84

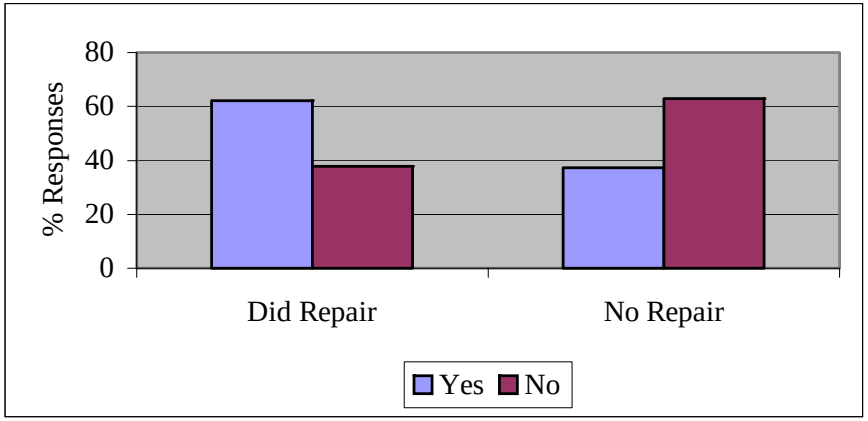
Probably reflective of demographics, differences between groups not significant.



<Q11> Were you aware that there was a website with information about this program?

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
Valid	**Yes**	62.1	37.2
	No	37.9	62.8
	Total	100	100
Valid Responses		29	298

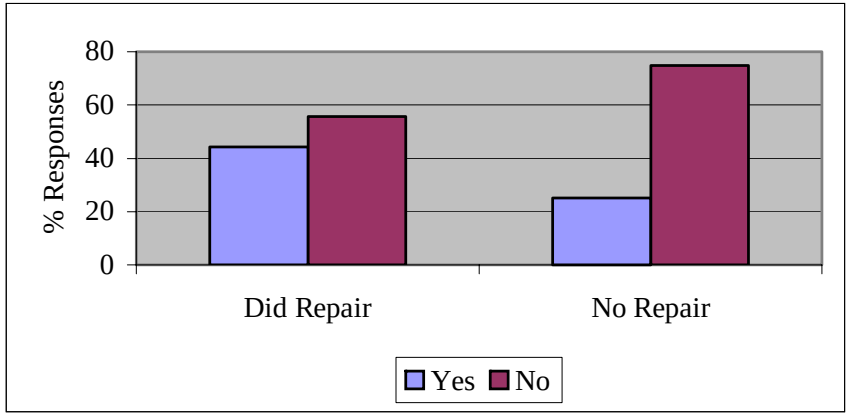
For some reason, participants who did repairs were much more aware of the existance of the program website than those who did not do a repair. Possibly because they interacted with the program more?



<q12> Did you use the website to learn about or obtain info on getting a pump test/repair?

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
Valid	**Yes**	44.4	25.2
	No	55.6	74.8
	Total	100	100
Valid Responses		18	111

Of those who knew of the website, those who did repair were more likely to use the website to get information on getting a pump test or pump repair.



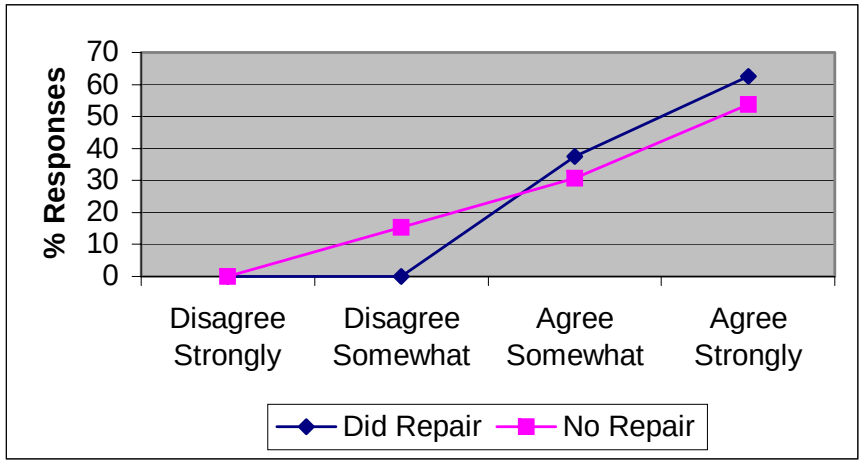
Q13 Where or from whom learn about website?

	Did Repair %	No Repair %	
Did a web search	0.0	7.1	
Word of Mouth	0.0	14.3	
Saw it on printed program material	11.1	17.9	Wide variaty of ways
Through an Agricultural organizati Q13C04	0.0	14.3	
Through a vendor or contractor	33.3	7.1	
From the Program	33.3	7.1	
Other- SPECIFY	22.2	28.6	Mixed
DON'T KNOW	0.0	3.6	
Total	99.9	100.0	
Total number of meaningful responses	9	28	

<Q14A> The information on the website was easy to find. Do you...

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	0
	Disagree Somewhat	0	15.4
	Agree Somewhat	37.5	30.8
	Agree Strongly	62.5	53.8
	Total	100	100
Valid Responses		8	26
Mean Response		3.63	3.38

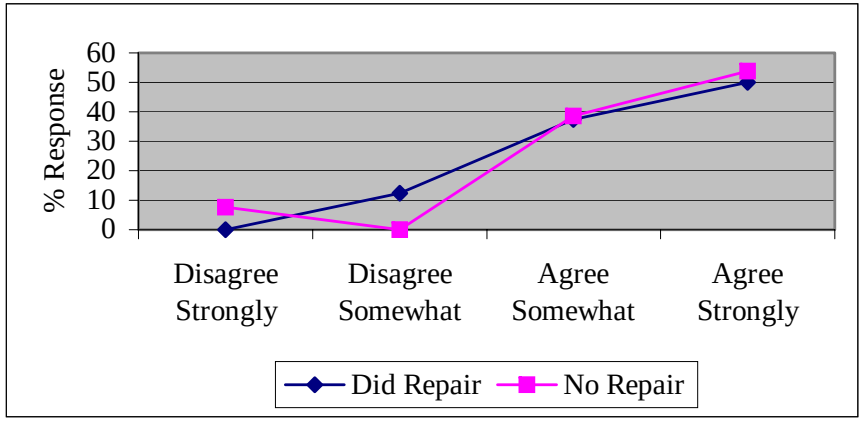
Over 80% of both groups agreed that information on the wesbsite was easy to find. The group who did not do a repair was less likely to agree.



<Q14B> The information on the website was easy to understand.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	7.7
	Disagree Somewhat	12.5	0
	Agree Somewhat	37.5	38.5
	Agree Strongly	50	53.8
	Total	100	100
Valid Responses		8	26
Mean Response		3.38	3.38

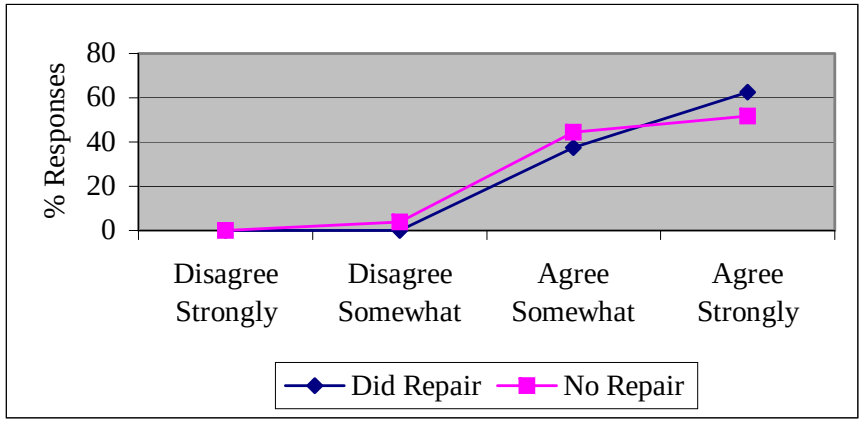
Similar responses, identical means



<Q14C> The information on the website was useful.

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
	Disagree Strongly	**0**	**0**
Valid	**Disagree Somewhat**	0	3.7
	Agree Somewhat	37.5	44.4
	Agree Strongly	62.5	51.9
	Total	100	100
Valid Responses		8	27
Mean Response		3.63	3.48

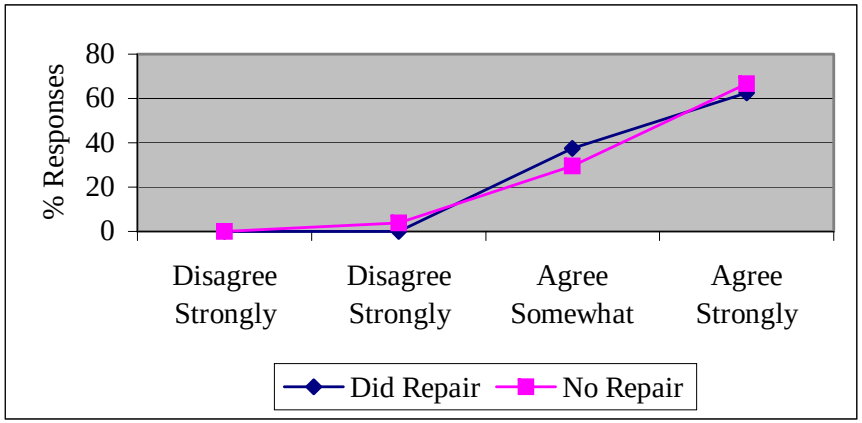
Over 90% of both groups found the information on the website useful, with the repair group finding it slightly more useful.



<Q14D> The information on the website was believable.

		Valid Percent	Valid Percent
		Did Repair	No Repair
	Disagree Strongly	0	0
Valid	Disagree Strongly	0	3.7
	Agree Somewhat	37.5	29.6
	Agree Strongly	62.5	66.7
	Total	100	100
Valid Responses		8	27
Mean Response		3.63	3.59

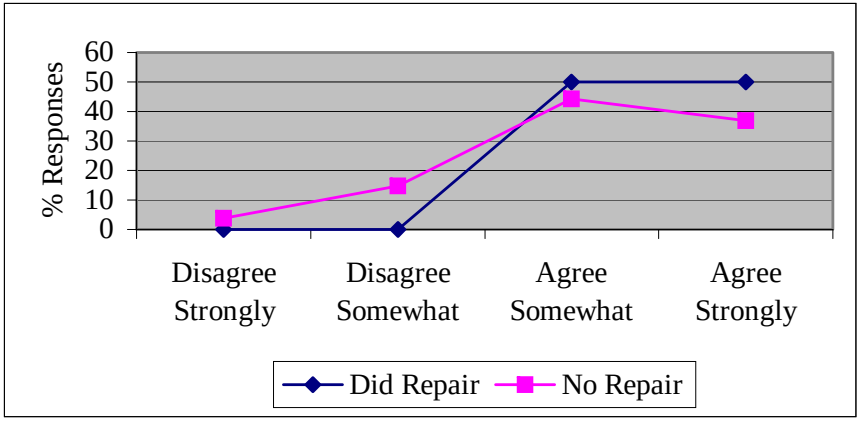
Again, the information on the website was believable, with over 96% of both groups saying the somewhat agree or strongly agree that the information was believable. Over 60% strongly agree.



<Q14E> The information on the website positively affected my attitude toward energy efficiency.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	3.7
	Disagree Somewhat	0	14.8
	Agree Somewhat	50	44.4
	Agree Strongly	50	37
	Total	100	100
Valid Responses		8	27
Mean Response		3.5	3.59

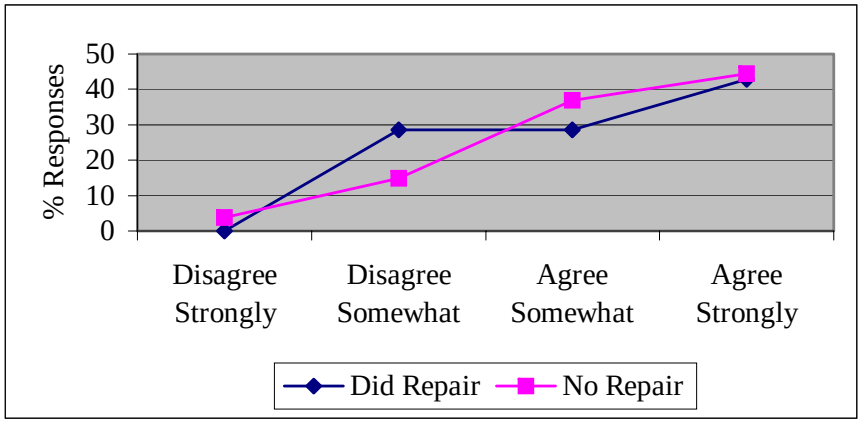
No significant differences between groups. But a generally positive response with over 80% of both groups somewhat or strongly agreeing that the website positively affected their attitude toward EE.



Q14F> I learned a considerable amount about available energy efficiency options from reading the website material.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	3.7
	Disagree Somewhat	28.6	14.8
	Agree Somewhat	28.6	37
	Agree Strongly	42.9	44.4
	Total	100	100
Valid Responses		7	27
Mean Response		3.14	3.15

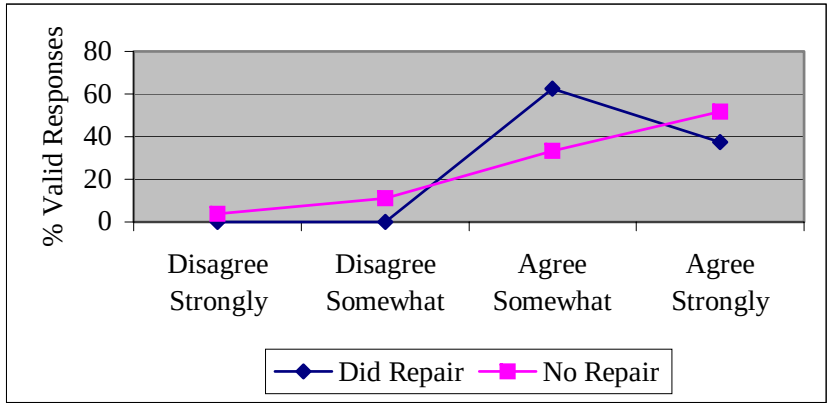
Again, some doubt about how much they learned about EE from the site. Over 40% strongly agreed, but 15-29% of both groups somewhat disagreed.



<Q14G> The information on the website material increased the likelihood that I will investigate energy efficiency options.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	3.7
	Disagree Somewhat	0	11.1
	Agree Somewhat	62.5	33.3
	Agree Strongly	37.5	51.9
	Total	100	100
Valid Responses		8	27
Mean Response		3.38	3.33

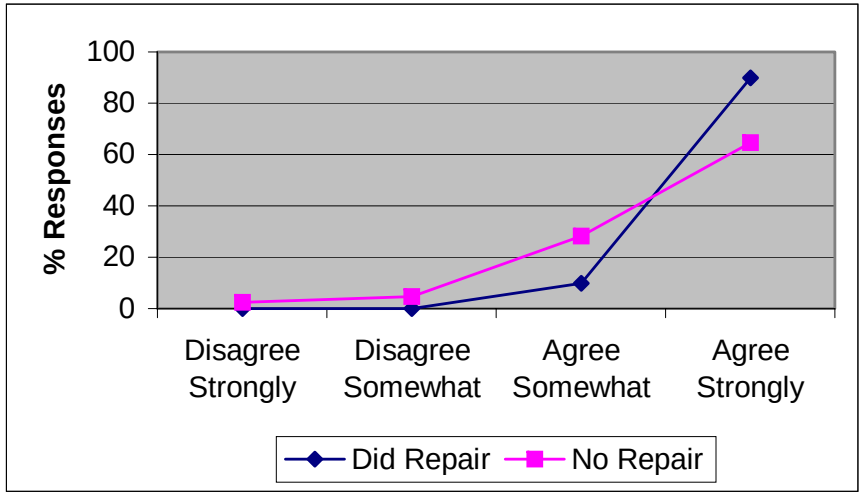
Qualitiatively, the website did less to influence on the group that had not done a repair toward investigating EE options



<Q15A> It was easy to find a Program-approved company to do a pump test. Do you...

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
	Disagree Strongly	0	2.4
Valid	**Disagree Somewhat**	0	4.7
	Agree Somewhat	10	28.2
	Agree Strongly	90	64.7
	Total	100	100
Valid Responses		20	255
Mean Response		3.9	3.55

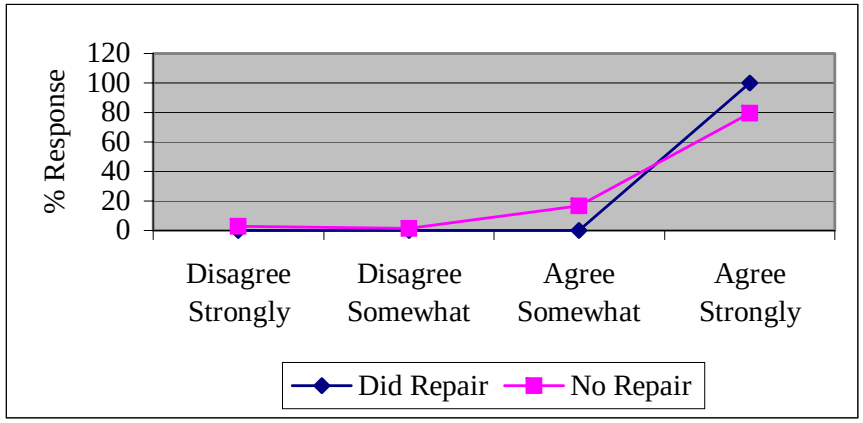
The participants that did repairs reported that it was easier to find an approved company to do the pump test. The difference between the mean responses was significant at the 95 percent confidence level. Does this say that ease to find a company to do the pump test has a significant effect on the liklihood of repair?



<Q15B> It was easy to request a pump test from one of the program-approved pump test companies.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	2.8
	Disagree Somewhat	0	1.2
	Agree Somewhat	0	16.7
	Agree Strongly	100	79.3
	Total	100	100
Valid Responses		29	251
Mean Response		4	3.73

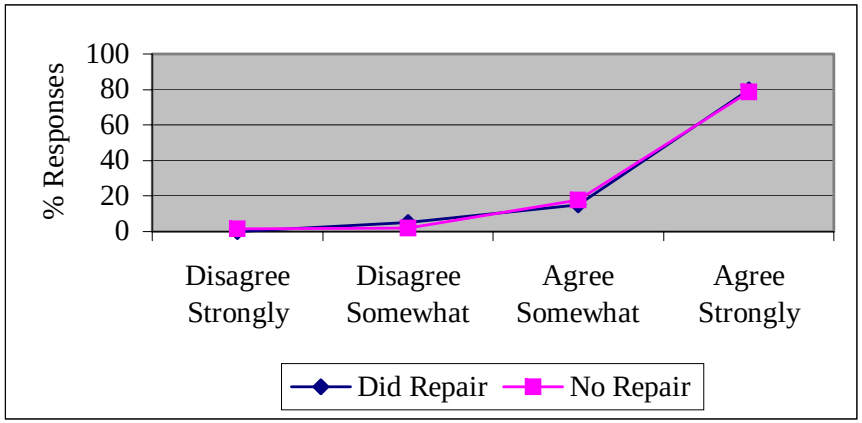
The repair group found it easier to request a pump test from a program approved pump test company than did the no repair group.



<Q15C> Once I requested a pump test, I didn't have to wait very long to have the test performed.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	1.6
	Disagree Somewhat	5	1.9
	Agree Somewhat	15	17.9
	Agree Strongly	80	78.6
	Total	100	100
Valid Responses		20	257
Mean Response		3.75	3.74

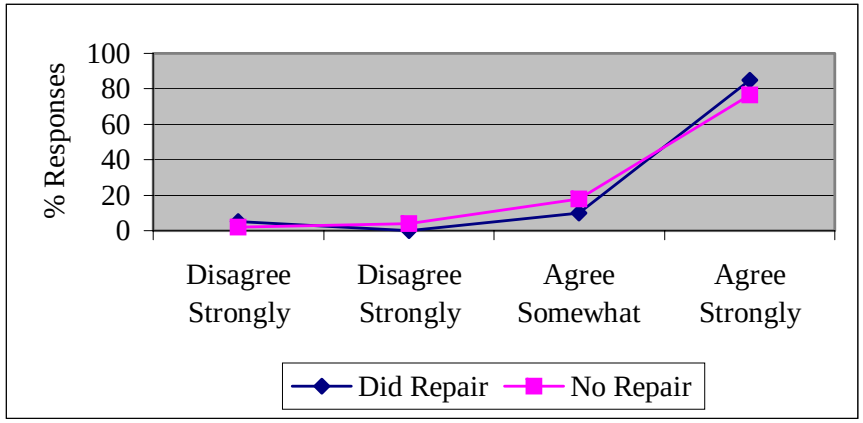
Over 90% of both groups agreed that the wait wasn't very long to get the pump tested once it was requested. Almost 80% agreed strongly.



><Q15D> I didn't have to wait very long to receive the results of the pump test.

		Valid Percent	Valid Percent
		Did Repair	No Repair
	Disagree Strongly	5	1.9
Valid	Disagree Strongly	0	3.9
	Agree Somewhat	10	17.8
	Agree Strongly	85	76.4
	Total	100	100
Valid Responses		20	258
Mean Response		3.75	3.69

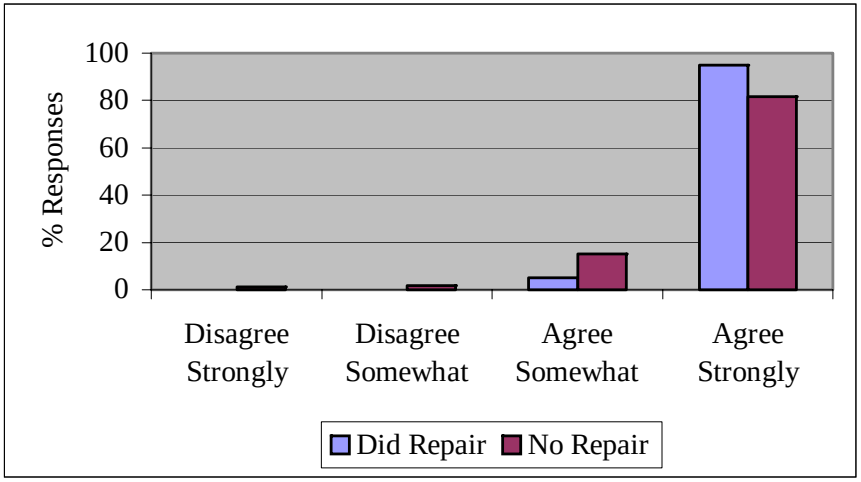
Both groups had similar experiences, with over 75% agreeing strongly and over 90% agreeing somewhat or strongly that they didn't have to wait very long for the pump test results.



<Q15E> The pump test results were useful.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	1.2
	Disagree Somewhat	0	1.9
	Agree Somewhat	5	15.2
	Agree Strongly	95	81.7
	Total	100	100
Valid Responses		20	257
Mean Response		3.95	3.77

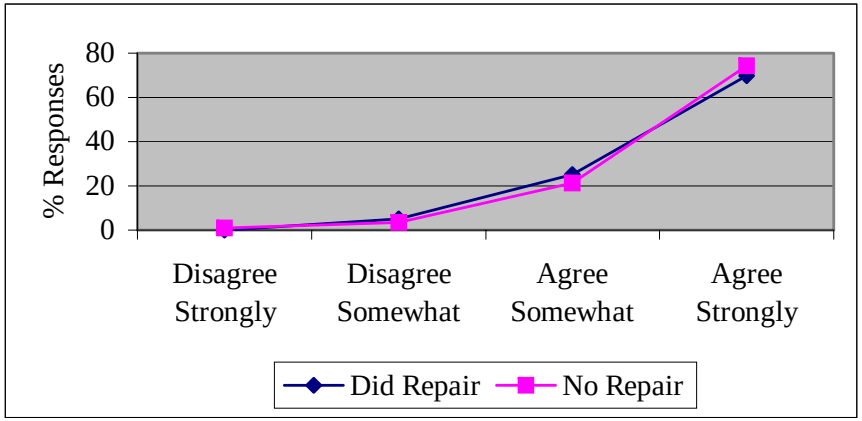
Both groups had similar experiences, with over 80% agreeing strongly and over 95% agreeing somewhat or strongly that thepump test results were useful. Only 3% of the no repair group disagreed with this statement.



<Q15F> The pump test results were easy to understand.

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
Valid	**Disagree Strongly**	0	0.8
	Disagree Somewhat	5	3.5
	Agree Somewhat	25	21.3
	Agree Strongly	70	74.4
	Total	100	100
Valid Responses		20	258
Mean Response		3.65	3.69

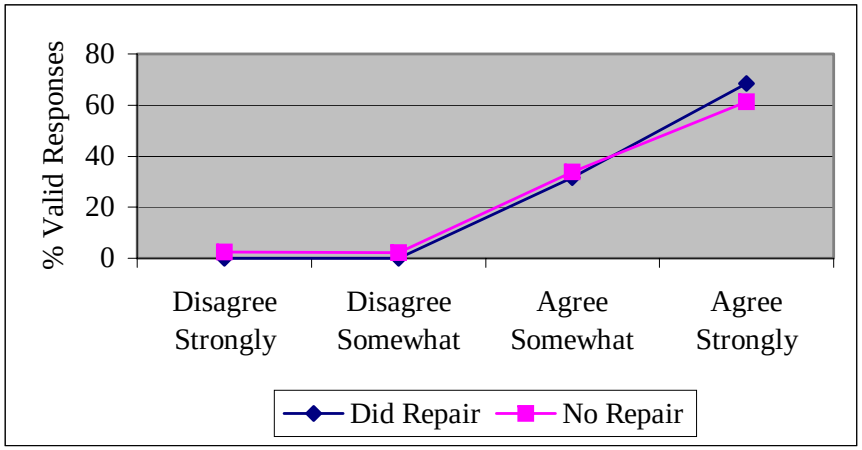
Both groups had similar experiences, with over 70% agreeing strongly and over 95% agreeing somewhat or strongly that thepump test results were easy to understand. Only 5% of both groups disagreed with this statement.



<Q15G> I believed the financial information in the pump test report.

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
Valid	**Disagree Strongly**	0	2.6
	Disagree Somewhat	0	2.2
	Agree Somewhat	31.6	33.9
	Agree Strongly	68.4	61.3
	Total	100	100
Valid Responses		19	230
Mean Response		3.68	3.54

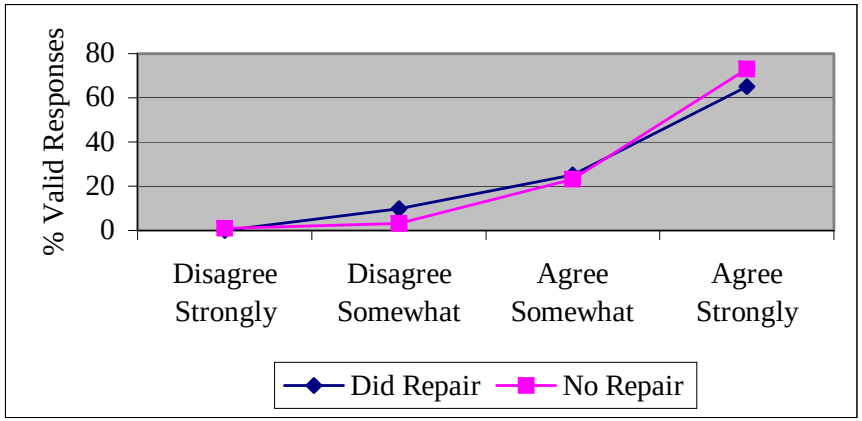
Over 95% of both groups agreed somewhat or strongly that the financial information in the pump test report believable. Only 5% of the no repair group disagreed with this statement.



<Q15H> As a result of having my pump tested, I am now more knowledgeable about needed operating efficiency improvements for my pumping operations.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	0.8
	Disagree Somewhat	10	3.1
	Agree Somewhat	25	23.1
	Agree Strongly	65	73.1
	Total	100	100
Valid Responses		20	260
Mean Response		3.55	3.68

Both groups agree with this statement to some degree.



<q15i> I used the pump test results to help decide whether to repair the system

		Valid Percent
		Did Repair
Valid	Disagree Strongly	0
	Disagree Somewhat	0
	Agree Somewhat	0
	Agree Strongly	100
	Total	100
Valid Responses		20
Mean Response		4

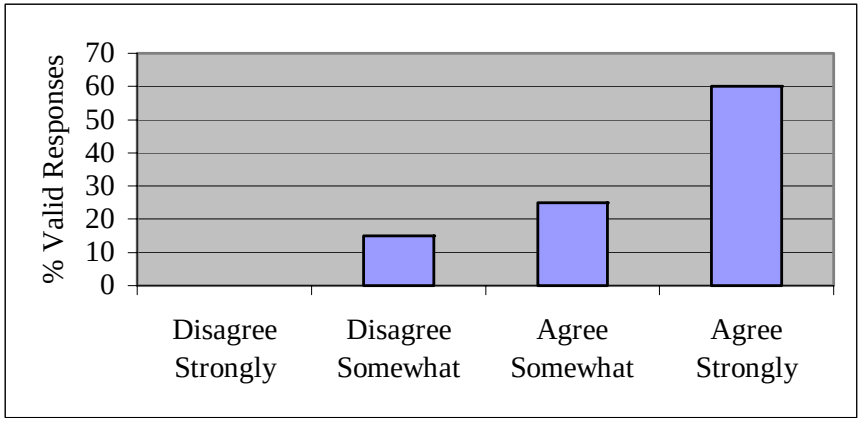
All participants who did a repair and responded to this question strongly agreed that they used the pump test results to decide whether to repair their system.

Not asked of no repair group

<q15j> The payback was sufficient to justify a repair to my pumping system

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
Valid	**Disagree Strongly**	0	0
	Disagree Somewhat	15	0
	Agree Somewhat	25	0
	Agree Strongly	60	0
	Total	100	0
Valid Responses		20	0
Mean Response		3.45	0

Of those that did the repair and answered this question, 60% agreed strongly, 25 agreed somewhat, and 15% disagreed somewhat that the payback was sufficient to justify the repair of the pump. This suggests that they understood the pump test results well enough to make this judgement. It is also not surprising, since they went ahead and did the repair based on the information they were presented with.

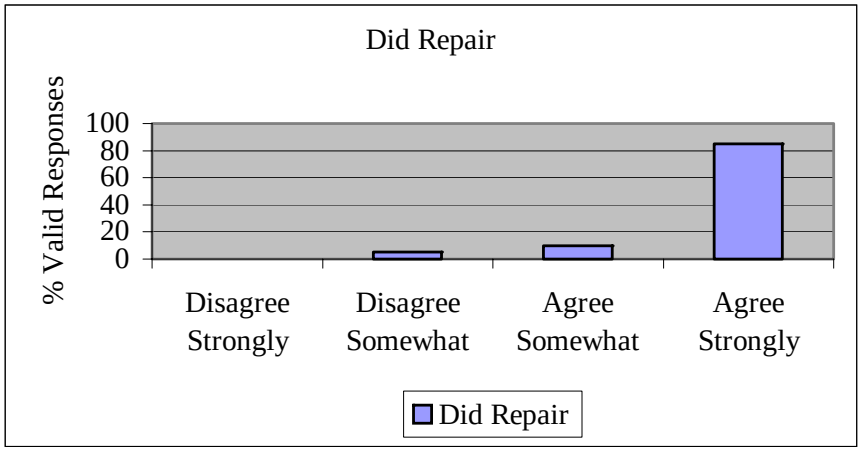


Not asked of no repair group

<q15k> The expected improvements in OPE from repairing the pump were verified by the post-repair pump test

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	0
	Disagree Somewhat	5	0
	Agree Somewhat	10	0
	Agree Strongly	85	0
	Total	100	0
Valid Responses		20	0
Mean Response		3.8	0

95% of those responding agreed that the post repair OPE verified the improvements projected by the pump test.



Not asked of no repair group

<q16> Did the person who gave the pump test give you more or different info than you had received previously?

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Yes	31.6	40.2
	No	68.4	59.8
	Total	100	100
Valid Responses		19	286
Mean Response			

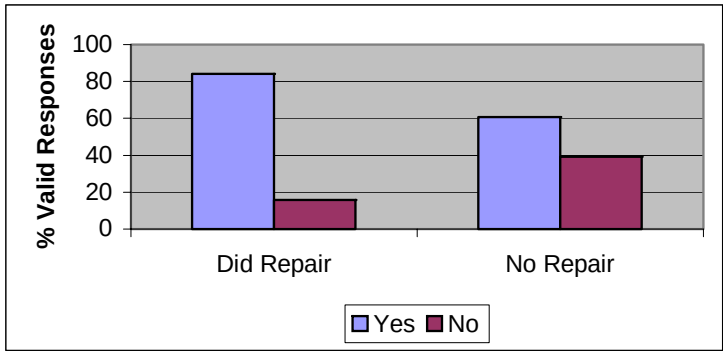
In only 40 % of the cases didn the pump tester supply more or different information than they had already received. This suggests good information transfer for 60-70% of the cases.

<Q18> Did the pump test person go over an economic analysis of your pump based on the pump test?

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Yes	84.2	60.9
	No	15.8	39.1
	Total	100	100
Valid Responses		19	284

Suggests that likelihood of repair correlated to whether the pump tester went over the economic analysis. There is a 23% difference in the response rate to this question and whether they did or did not review the economic analysis. Program needs to work on being sure that pump testers do actually review economic analysis.

Mean Response

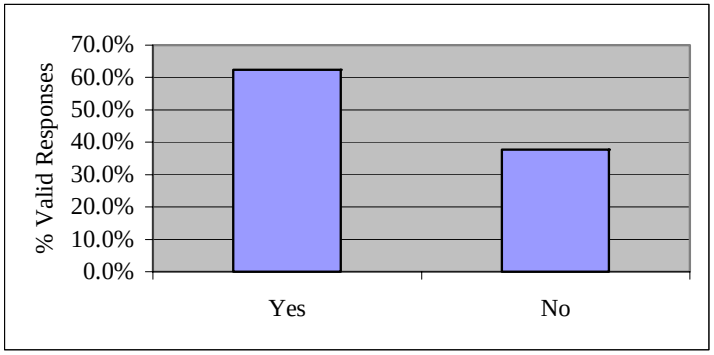


Alternate Analysis

Frequencies

		Repair	no repair	Total Fequencies	Valid %
Valid	Yes	16	173	189	62.4%
	No	3	111	114	37.6%
	Total	19	284	303	100.0%

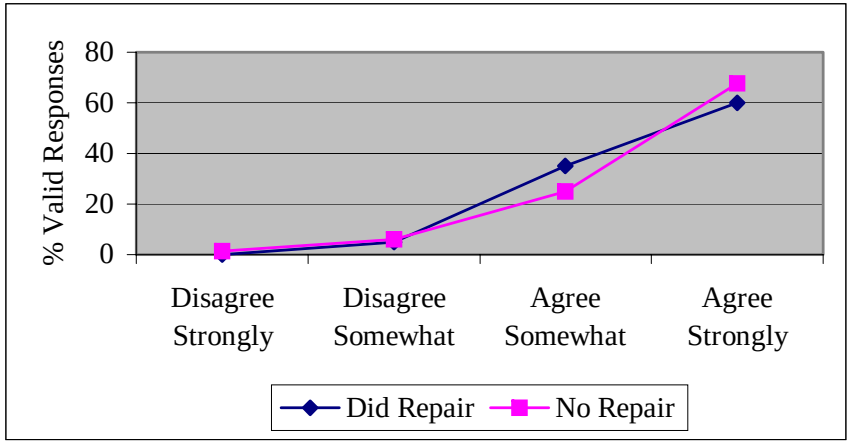
Yes	62.4%
No	37.6%



<Q19A> The information from the pump tester increased my AWARENESS of potential problems with respect to pumping efficiency.

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
Valid	**Disagree Strongly**	0	1.4
	Disagree Somewhat	5	6.1
	Agree Somewhat	35	25
	Agree Strongly	60	67.6
	Total	100	100
Valid Responses		20	296
Mean Response		3.55	3.59

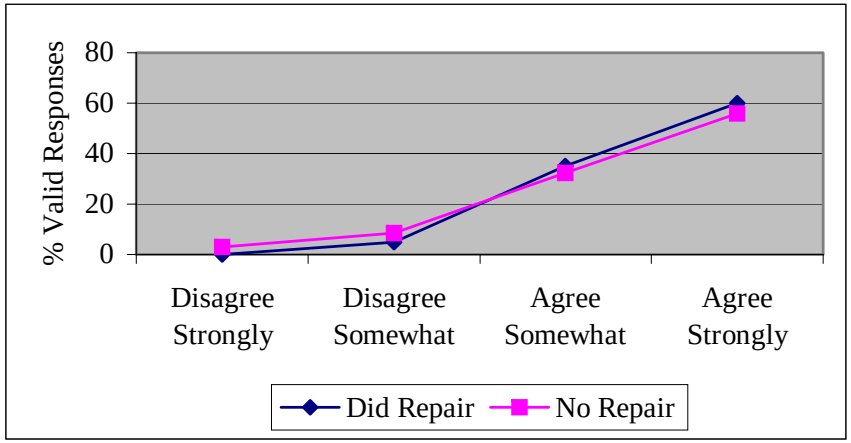
Over 90% of those responding agreed that the information supplied by the pump tester increased their awareness of potential problems with respect to pumping efficiency. This means that the program is meeting one of its primary goals, increased awareness.



<Q19B> The information from the pump tester increased my AWARENESS OF potential solutions for these problems.

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Disagree Strongly	0	3.1
	Disagree Somewhat	5	8.5
	Agree Somewhat	35	32.4
	Agree Strongly	60	56
	Total	100	100
Valid Responses		20	293
Mean Response		3.55	3.41

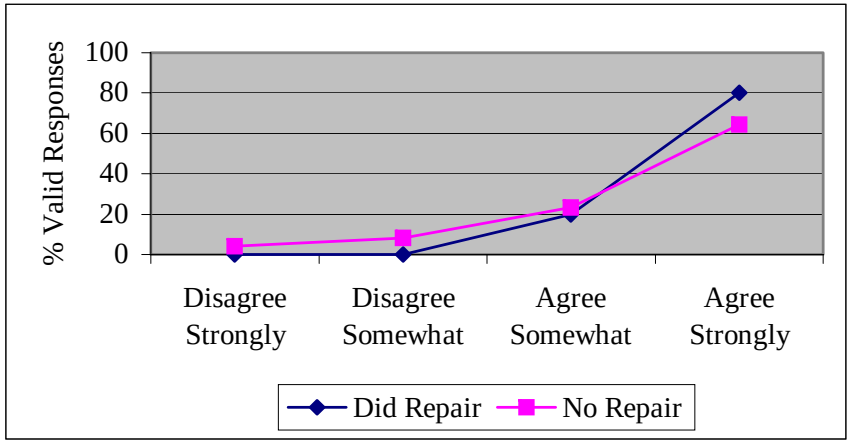
Near 90% of those responding agreed that the information supplied by the pump tester increased their awareness of potential solutions with respect to pumping efficiency. This means that the program is meeting one of its primary goals, increased awareness.



<Q19C> The information from the pump tester was clearly and thoroughly gone over.

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
Valid	**Disagree Strongly**	0	4.1
	Disagree Somewhat	0	8.2
	Agree Somewhat	20	23.4
	Agree Strongly	80	64.3
	Total	100	100
Valid Responses		20	291
Mean Response		3.8	3.48

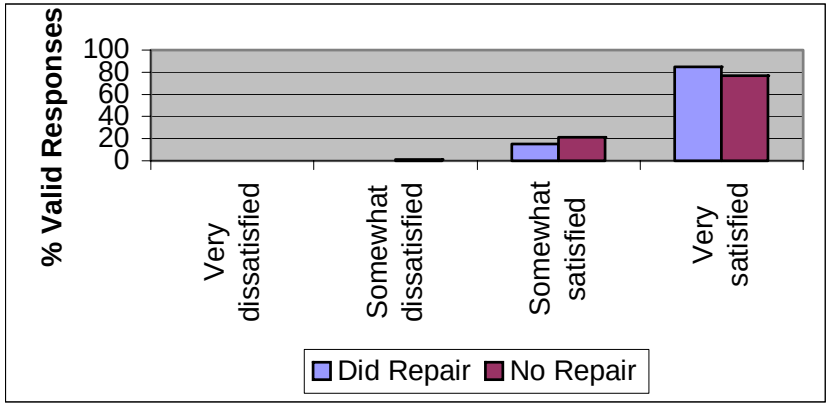
This data suggest that the pump testers are doing a clear and thorough job of going over the information with the clients. It does suggest that those that did not have their pumps repaired were less sure of their clarity and thoroughness. This difference in the means was significant at the 95% confidence level.



<Q20> Overall, what was your level of satisfaction with the pump test process? Would you say you were.....

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Very dissatisfied	0	0.3
	Somewhat dissatisfied	0	1.3
	Somewhat satisfied	15	21.5
	Very satisfied	85	76.8
	Total	100	100
Valid Responses		20	298
Mean Response		3.85	3.75

Overall satisfaction with the pump test process is high, with over 95% responding that they are somewhat or very statisfied, and over 77% saying they are very satisfied.



Q 21. Why were you dissatisfied? (I13, I14, I15, I18)

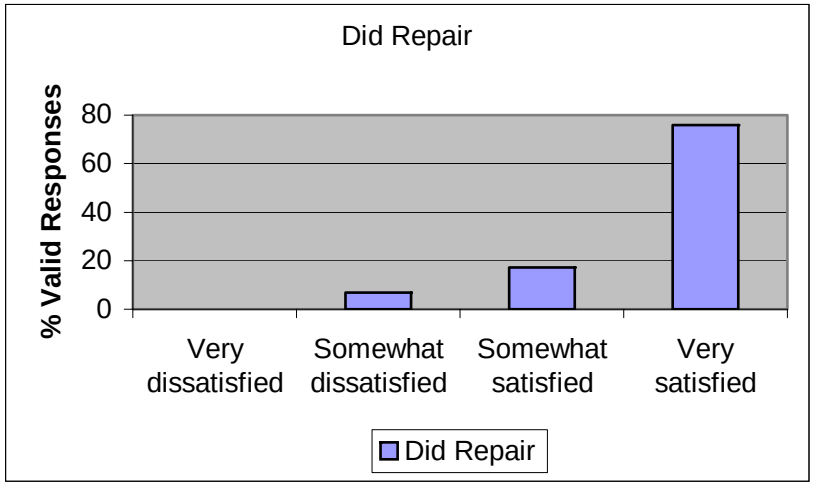
Repair Group Open Ended	No Repair Group Open Ended	
	the tester did'nt get the water level correct and I lost about 5000 dollars (Va lley Pump	
No dissatisfied, so skipped in survey.	in Tulare/ nfi	B4
	just need more info and further dialouge	After
	the follow up needed to be done in person and explained --rather than just gett ing	
	paperwork back	After
	Because they were pushing right away before I could get the grapes for Harvest I didn't want to turn water on but they were	
	pushy.	After
	i have not been able to get a follow up.....we tested and put in a new pump and can't get a followup.....pump check is the	
	name of the place	After
	Three cases quote lack of follow up as an issue, two various.	

<q27> What is your overall level of satisfaction with your pump repair experience?

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Very dissatisfied	0	
	Somewhat dissatisfied	6.9	
	Somewhat satisfied	17.2	
	Very satisfied	75.9	
	Total	100	
Valid Responses		29	
Mean Response			

Not asked of no repair grp.

Satisfaction with the pump repair process is high, with over 93% responding that they are somewhat or very statisfied, and over 75% saying they are very satisfied.



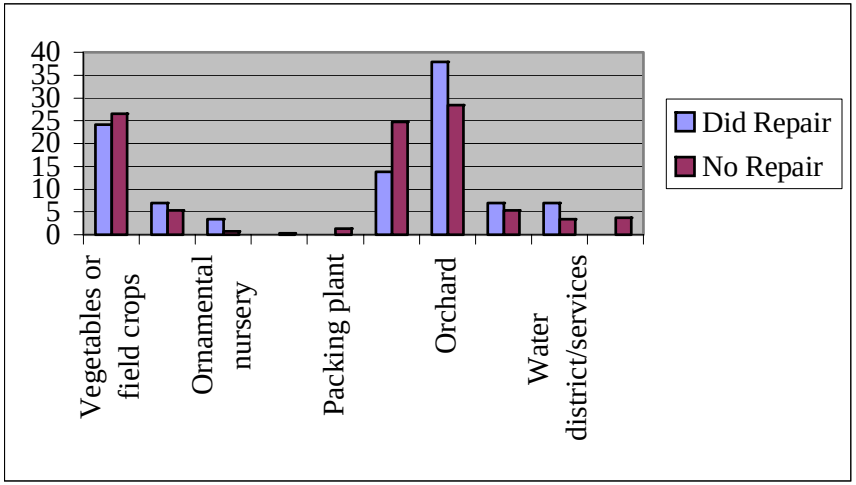
Q28. Why were you dissatisfied (with the repair process)?

Repair Group Open Ended	No Repair Group Open Ended
Had to do with the water table being drawn down/ nfi	not applicable to no repair group.
It didn't meet my expectations as far as the amount of the pump output that I was expecting.	

<Q37> Which of the following is your largest source of revenue? Would you say it is.....

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Vegetables or field crops	24.1	26.5
	Livestock	6.9	5.4
	Ornamental nursery	3.4	0.7
	Indoor crops (greenhouse)	0	0.3
	Packing plant	0	1.3
	Vineyard/winery	13.8	24.8
	Orchard	37.9	28.5
	Dairy farm	6.9	5.4
	Water district/services	6.9	3.4
	OTHER - SPECIFY	0	3.7
	Total	100	100
Valid Responses		29	298

The two populations are very similar

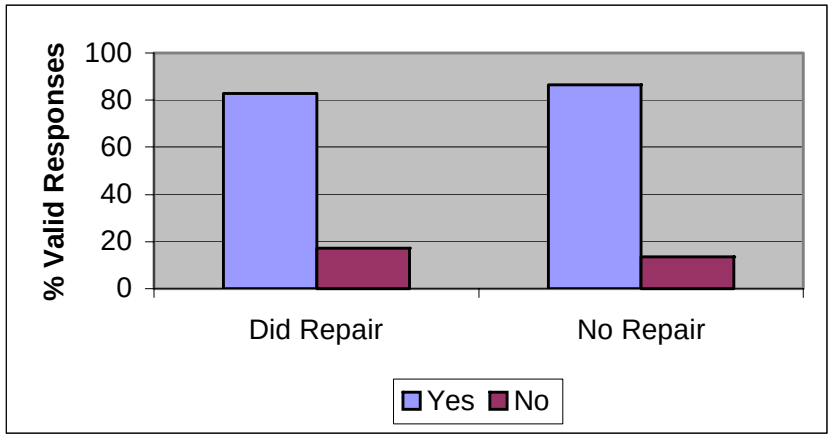


<Q38> Does your business own this property?

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
Valid	**Yes**	82.8	86.6
	No	17.2	13.4
	Total	100	100
Valid Responses		29	299

Mean Response

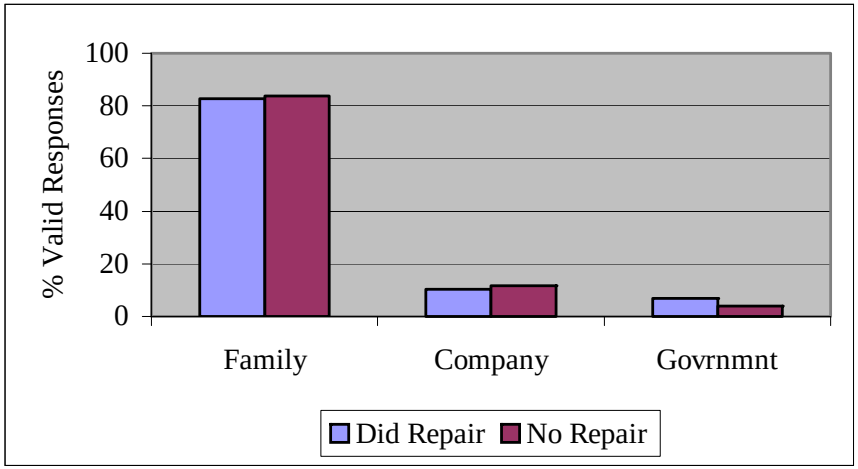
Populations very similar



<Q39> Would you consider your business or organization operated by a family or a company or government entity?

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Family	82.8	83.9
	Company	10.3	11.7
	Govrnmnt	6.9	4
	Not applicable	0	0.3
	Total	100	100
Valid Responses		29	299

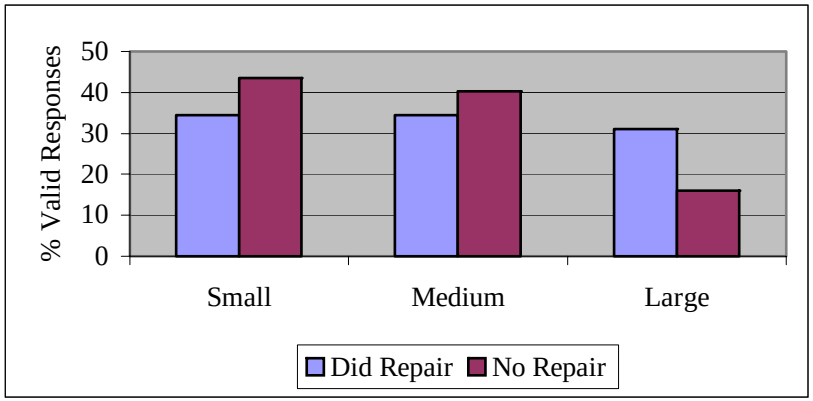
Populations very similar



<Q40> Compared to other businesses or organizations similar to yours, would you categorize this business or organization as small, medium or large?

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
Valid	**Small**	34.5	43.6
	Medium	34.5	40.3
	Large	31	16.1
	Total	100	100
Valid Responses		29	298
Mean Response			

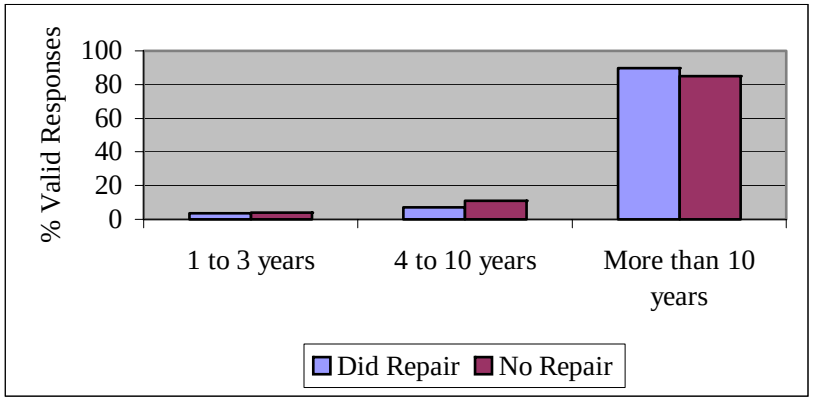
As has been seen in prior agricultural sector evaluations, the repair group tends to be larger entities that can take advantage of the oportunity, while smaller organizations can't. Thus the no repair group tend to have larger numbers of smaller organizations.



<Q41> How long has your company or organization been operating at its current location? Would you say....

		Valid Percent	Valid Percent
		Did Repair	**No Repair**
Valid	**1 to 3 years**	3.4	4
	4 to 10 years	6.9	11
	More than 10 years	89.7	84.9
	Total	100	100
Valid Responses		29	299
Mean Response			

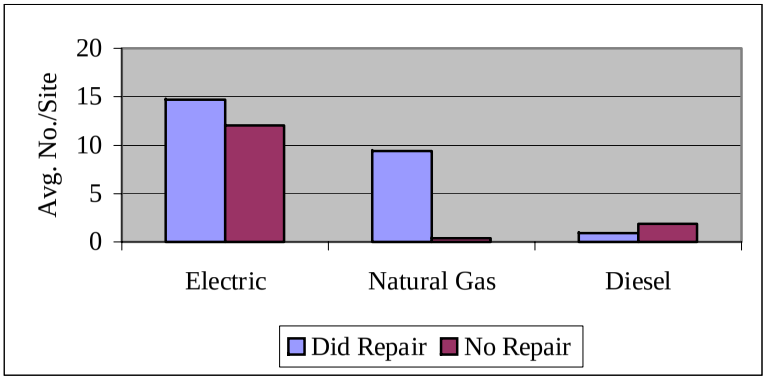
Similar to prior agricultural sector evaluations, the repair group tends to be more established entities that can take advantage of the oportunity, while the no repair group younger organizations that are still struggling and don't have the capital to take advantage of the opportunity.



<q42a> How many electric pumps are used in your operation?

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	0		1.7
	1	3.4	13.1
	2	17.2	10.7
	3	10.3	8.7
	4	3.4	6.4
	5	6.9	6
	6	6.9	5.4
	7		3
	8	3.4	4.4
	9		2.3
	10		5.7
	11		2.3
	12		4
	13	3.4	1.3
	14		1.3
	15		3
	16		0.7
	18		0.7
	19		0.7
	20	13.8	1.7
	21		0.3
	22		0.3
	24	3.4	
	25	3.4	3
	26	3.4	0.3
	27	3.4	0.3
	28		0.7
	30	6.9	3.7
	32		0.3
	33		0.3
	35	3.4	0.7
	36		0.3
	38	3.4	
	40		1.7
	45	3.4	0.7
	48		0.3
	49		0.3
	50		1.7
	62		0.3
	70		0.7
	125		0.3
	225		0.3
	Total	99.4	100
Valid Responses		29	298
Mean Response		14.72	12.01

	Did Repair	No Repair
Electric	14.72	12.01
Natural Gas	9.39	0.37
Diesel	0.89	1.87



Large natual gas value due to one site with 260 natural gas pumps.

<q42b> How many natural gas pumps are used in your operation?

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	0	92.9	91.6
	1		2.7
	2		1.7
	3	3.6	0.7
	4		1
	5		0.3
	6		0.3
	9		0.3
	10		0.3
	12		0.3
	16		0.3
	17		0.3
	260	3.6	
	Total	100	100
Valid Responses		28	297
Mean Response		9.39	0.37

<q42c> How many diesel pumps are used in your operation?

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	0	71.4	64.9
	1	10.7	12.7
	2	7.1	7.7
	3		3.3
	4	3.6	2.3
	5		2
	6	3.6	0.7
	7		1.7
	8	3.6	1
	9		0.3
	10		0.3
	12		0.7
	13		0.3
	15		0.3
	17		0.3
	18		0.3
	21		0.3
	30		0.3
	160		0.3
	Total	100	100
Valid Responses		28	299
Mean Response		0.89	1.87

q43yearadj> What is your estimate of the average age of your pumps? -- Years (or the midpoint of the value given in q43range)

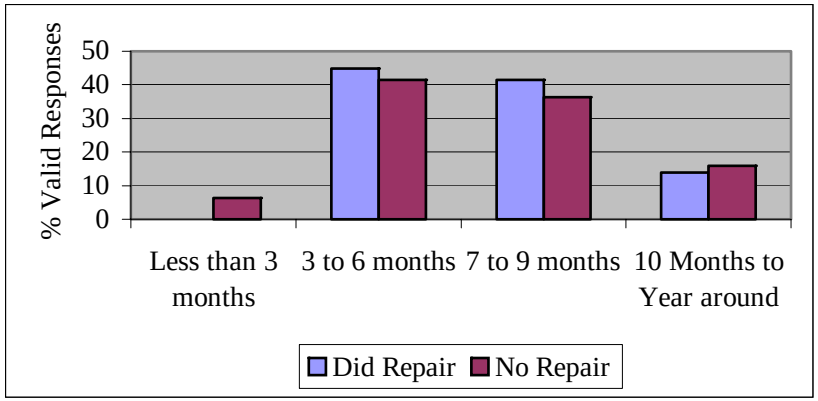
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	3	10.3	10.3	10.3
	3	1	3.4	3.4	13.8
	5	1	3.4	3.4	17.2
	10	3	10.3	10.3	27.6
	12	3	10.3	10.3	37.9
	13	1	3.4	3.4	41.4
	15	4	13.8	13.8	55.2
	16	1	3.4	3.4	58.6
	18	1	3.4	3.4	62.1
	19	1	3.4	3.4	65.5
	20	2	6.9	6.9	72.4
	25	1	3.4	3.4	75.9
	28	1	3.4	3.4	79.3
	29	1	3.4	3.4	82.8
	30	2	6.9	6.9	89.7
	35	1	3.4	3.4	93.1
	40	1	3.4	3.4	96.6
	70	1	3.4	3.4	100
	Total	29	100	100	
Valid Responses				29	
Mean Response				18.33	**Average age**

<Q44> On average, how many months are the pumps used during the year? WOULD YOU SAY...

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Less than 3 months	0	6.4
	3 to 6 months	44.8	41.4
	7 to 9 months	41.4	36.4
	10 Months to Year around	13.8	15.8
	Total	100	100
Valid Responses		29	297

Mean Response

Similar pump usage. Non repair are smaller, might fit with lower use.

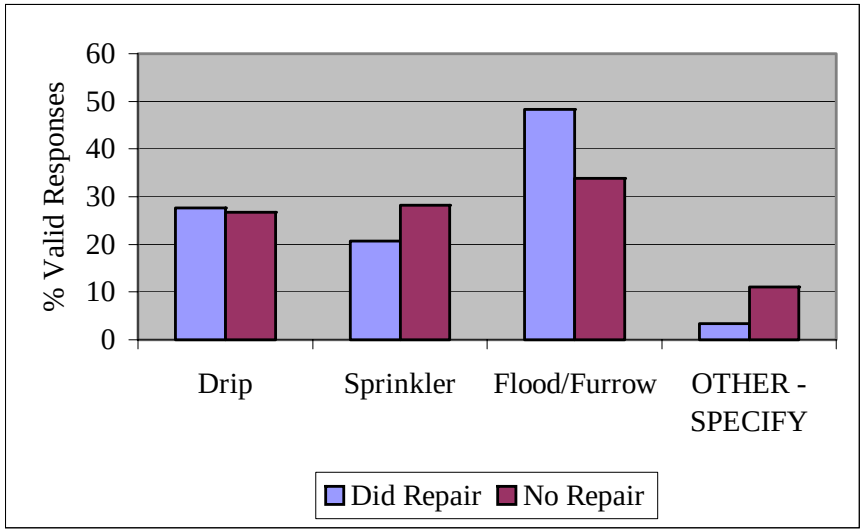


<Q45> Which type of irrigation system do you use for the majority of the pumps at your site? Is it...

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Drip	27.6	26.8
	Sprinkler	20.7	28.2
	Flood/Furrow	48.3	33.9
	OTHER - SPECIFY	3.4	11.1
	Total	100	100
Valid Responses		29	298

Mean Response

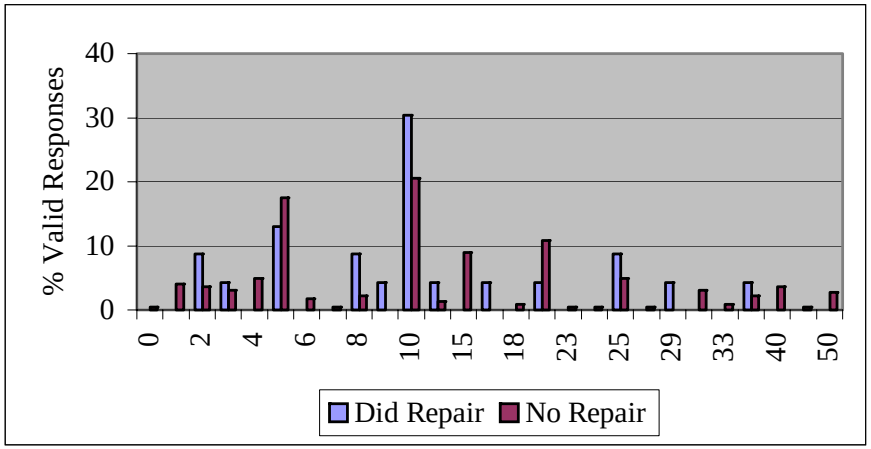
Why more flood furrow for repair grp?



<q46> Approximately what percentage of your total annual operating costs is spent in ELECTRICITY bills?

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	0		0.4
	1		4
	2	8.7	3.6
	3	4.3	3.1
	4		4.9
	5	13	17.5
	6		1.8
	7		0.4
	8	8.7	2.2
	9	4.3	
	10	30.4	20.6
	12	4.3	1.3
	15		9
	16	4.3	
	18		0.9
	20	4.3	10.8
	23		0.4
	24		0.4
	25	8.7	4.9
	28		0.4
	29	4.3	
	30		3.1
	33		0.9
	35	4.3	2.2
	40		3.6
	45		0.4
	50		2.7
	Total	100	100
Valid Responses		23	223
Mean Response		12.13	14.05

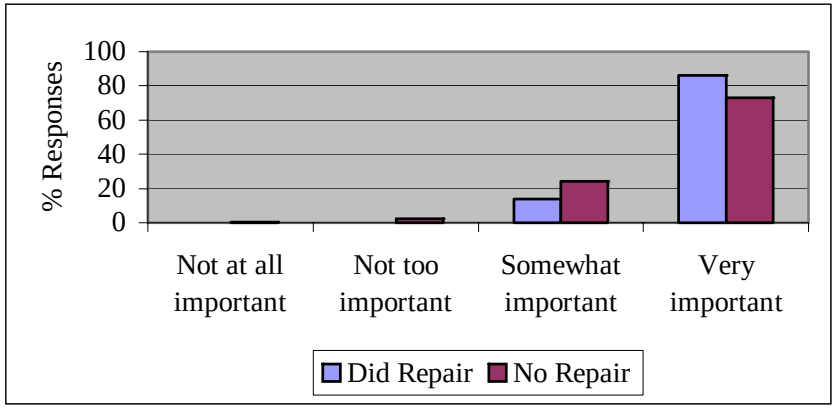
Respondants estimate that 12-14% of their annual operating costs are spent on electricity bills.



<Q47> How important is it for you to be sure that your pumping system makes efficient use of electricity? Is it...

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Not at all important	0	0.3
	Not too important	0	2.4
	Somewhat important	13.8	24.2
	Very important	86.2	73
	Total	100	100
Valid Responses		29	293
Mean Response		3.86	3.7

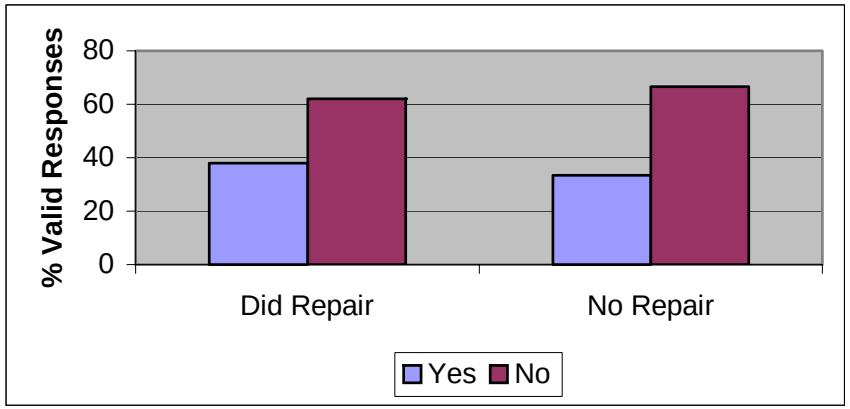
Repair group directionally consider it more important to use electricity efficiently in pumping.



<Q48> Does your company have a regular schedule for testing its pumping system?

		Valid Percent	Valid Percent
		Did Repair	No Repair
Valid	Yes	37.9	33.3
	No	62.1	66.7
	Total	100	100
Valid Responses		29	300

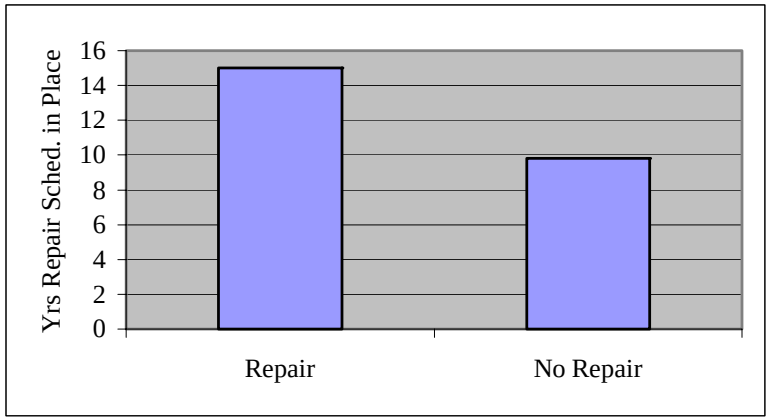
Responses between groups similar, 1/3 has regularly scheduled testing.



Q49. How long has this schedule been in place?

		Valid Percent	Valid Percent
		Repair	No Repair
Valid	0.25		2
	0.5	9.1	1
	0.75		1
	1		6
	1.5	9.1	1
	2	18.2	11
	2.25		1
	2.5		1
	3		5
	4	9.1	5
	5		7
	6		3
	7		2
	8		3
	9		2
	10	9.1	13
	12		8
	13		1
	15	9.1	8
	16		1
	17		1
	20	9.1	10
	25		3
	30	18.2	2
	34		1
	40		1
	50	9.1	
	Total	100	100
Valid Responses		11	100
Mean Response		15	9.81

	Repair	No Repair
Avg. Time In Place	15	9.81



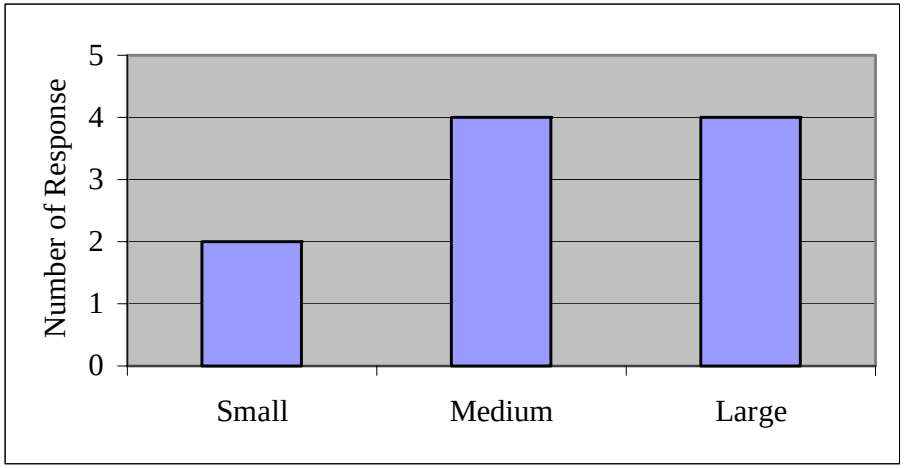
Difference due to small repair sample size (11)

Pump Test/Repair Company Interviews

This section includes the question-by-question analysis results that were created in conducting the process analysis for the Pump Test/Repair Company Interviews. Much but not all of this analysis has been presented in the process results sections of the body of the report. This appendix presents only the raw analysis findings, and while it does often postulate specific meanings for the results of each analysis, it does not expound on their meaning in the context of the results of other questions.

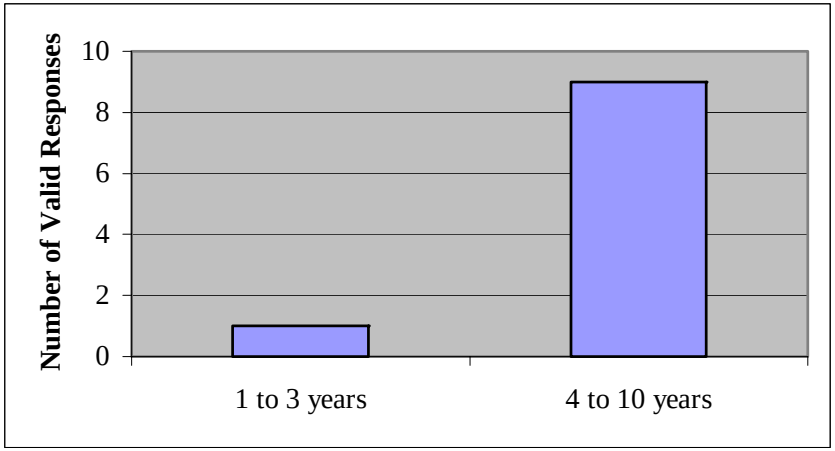
Q1 Would you consider your company a large, medium, or small company compared to others in your field? [firmographics]

		Response
1	Small	2
2	Medium	4
3	Large	4



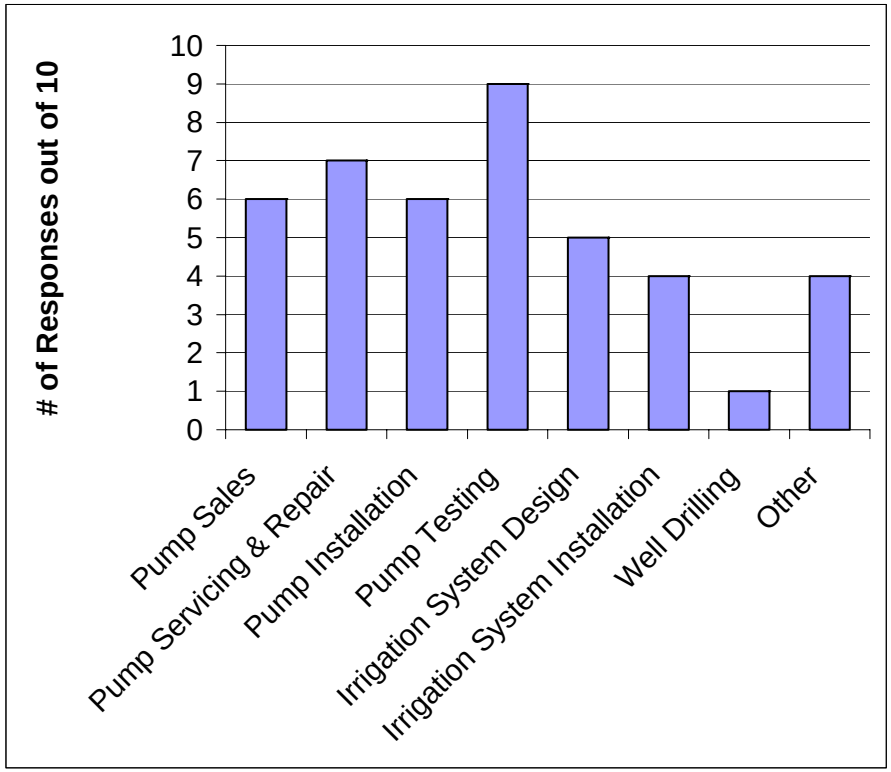
Q2 How long have you been in business at this location? [firmographics

Q2		Response
2	1 to 3 years	1
3	4 to 10 years	9



Q3 What equipment and services does your company offer? (CHECK ALL THAT APPLY) [firmographics]

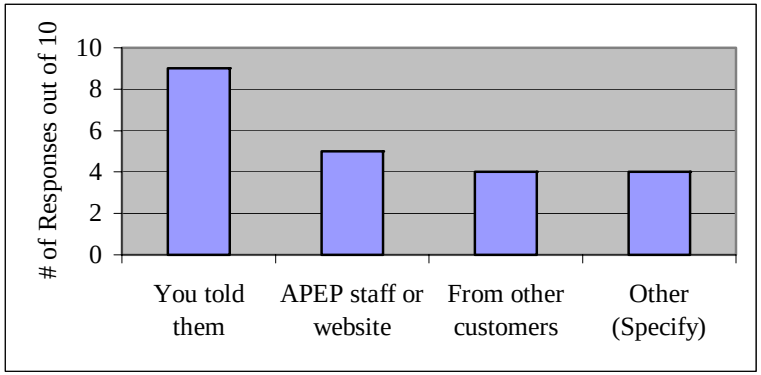
Ans #		# Resp.
1	Pump Sales	6
2	Pump Servicing & Repair	7
3	Pump Installation	6
4	Pump Testing	9
5	Irrigation System Design	5
6	Irrigation System Installation	4
7	Well Drilling	1
8	Other	4



Q4 How have your customers learned that your company was participating in the Program? (Check all that apply)

Q4		# Responses
1	You told them	9
2	APEP staff or website	5
3	From other customers	4
4	Other (Specify)	4

SPECIFY:_ Through Ag Alert News
MEC
SEC Program
APEP Seminars, Water Dist Newsletter



Q #	Question	Summary
5	How often and in what formats do you communicate with the APEP program staff? What kinds of issues do you communicate about? (Does this relationship work well? What are its strengths and weaknesses? Can you recommend improvements?) No link in logic models, assessing communication between trade allies and program. Possibly IT Linkages 1-12, 25. Relates to the CIT Eval Hypothesis that suggests that the process works well between APEP and pump testers.	Nine out of ten felt that that communications with APEP on Pump test and repair approval was very good and had no recommendations for improvements. One person who only communicated occasionally said that communications were not really smooth, but had no recommendations. One recommended making the paperwork easier.
6	From your viewpoint, does the program seem to have enough staff to make things flow smoothly? Any suggestions for areas of improvement? IT Linkages 13-21	Eight of Ten thought it was good and made no suggestions for improvements. Two thought it took too long to get paper work through. One suggestion was that they should call customers and correct the paperwork for them rather than sending it back.
7	What is your opinion of the communication among people/groups responsible for different aspects of the program? (Don't read: e.g., between you and the field coordinators, pump test coordinators, and the rebate processing staff) IT Linkages 1-12, 25	Seven out of 10 thought communication amongst staff was good, three couldn't comment

Q #	Question	Summary
8	What is your understanding of the primary goals of the CIT Agricultural Pump Efficiency program? Have the goals changed since the start of the program? Are the goals appropriate? Are there other goals that should be included? (What are they?) ITID 1 Linkages 25	All ten responded that the goal was to increase the efficiency of pumping plants. Said goals had not changed.
9	How were program goals communicated to you? ITID 1 Linkages 25	Goals are communicated through seminars and one on one meeting with APEP Staff.
10	What actions do you think would increase the success of the program in reaching its goals? ITID 1 Linkages 1-12	Suggestions included (1) operate in SCE territory, (2) think of better rebates structure of small pumps, rebate isn't worth it, (3) give a flat rebate and eliminate the paperwork, (4) three separate responses said to simplify paperwork.
11	Have you promoted the pump repair rebate to your customers? If so, how? PTID 10, Linkage 21	Seven out of ten said they promoted the program, mainly by passing out program literature and word of mouth. Three said it didn't apply.
12	What in particular do you think that your marketing of the pump repair rebates does to cause customers to repair their pump under the program? PTID 10, Linkage 21	Four of ten said "Nothing**".** I.e. they don't think anything they do in marketing the rebates causes the customer to repair his pump. Three said that marketing the cost savings helps get them to do it. One said the pump test show it is necessary. (2 NA)

Q #	Question	Summary
13	Do you think that your participation in the APEP program brought in more pump repair customers in 2002 and 2003 than you would have had otherwise? If yes, can you qualify it to be quite a bit, a few, etc? PTID 10, Linkage 21	Three said NA, three said no, and four said yes (estimates ranged from a few to 25%)
14	Are there changes you might suggest in program esign or im ementation to etter reach a i er or i erent set o customers in ages in age in age	Brochures in languages other than Spanish (Asian), promote through pump companies more (2), other service areas, use farm bureaus, decrease paperwork.
15	What are the advantages and disadvantages of the current program marketing arrangements? What would you change? ITID 1 Linkages 1, 2	Five said the program was doing a good job and not to change it. Three said that the stopping and starting of the program made it unreliable and undependable to the customers. One pump repair shop said the program didn't benefit them, and one said that it should be simplified (there were too many options with no real energy savings difference between them.
16	Does your company provide pump testing under the program?	Nine yes, one no.
17	Who decides what information you provide to each customer after a pump test? ITID 1 Linkages 1, 13	Three said "I do", five said the program specified.
18	Does this system work well? What changes would you make? ITID 1 Linkages 1, 13	Seven say it works well, no changes. Two said the paperwork was too complicated and cumbersome.

Q #	Question	Summary
19	Do you feel that the approaches that you have used to market the program have influenced customers to repair their pumps? If so, what are the specific approaches that have been successful? ID 10, PT Link 2	Six of seven said yes, marketing helps them decide to make a repair. Four out of seven said that explaining the economic analysis was the primary factor. One said rebate and one just said telling them about the program influenced some cases.
20	What do you think the program might do to make your marketing more successful in influencing customers to make pump repairs? ID 10, Link 21	Four said "Nothing". Suggestions were (1) encourage pump companies to do mailings to customers, (2) one on one discussion of economic analysis works best, (3) market rebates more.
21	How long does the typical pump test take including travel time to and from the pump location? ITID 5 Linkages 14	Six of nine said 1.5 to 2 hours. One said 1 hour, one 2.5-3, and one 5. Four pointed out that it depended on a lot of factors. Looks like 2 is a good best value.
22	How much time do you typically spend developing the pump test report and discussing it with the customer? ITID 5 Linkages 14	One to two hours seemed about average. Some said 30 minutes one said 2.8 hours. Several pointed out that often the reports included multiple pumps.
23	What are the criteria for whether a pump test should be done? ITID 4 Linkage 18, ITID 5 Linkages 14, 15; also IT Linkage 25	Virtually unanimous that it is when the customer sees a drop off in performance or has a regular schedule.
24	How were you trained in the program requirements/procedures? ITID 5 Linkages 13-15; also IT Linkage 25	Seven of nine sited trains, either by a CIT person of through classes or seminars. One said that he couldn't remember any training and another site CIT guidelines and worksheets.

Q #	Question	Summary
25	As part of the program, you are supposed to hand deliver an Economic Analysis to the customer and explain the results. Do you do this, and how does the program track whether you do? ITID 4 Linkages 18	Eight of nine said "Yes" that they hand delivered the economic analysis. Three pointed out that the customers had to sign off on the economic analysis. One said he didn't discuss it with them because they didn't care, they just want to know how much water it was pumping.
26	How does the program assure that customers are receiving quality pump tests? ITID 1 Linkages 14-21, 25	By providing training, selecting experienced testers, checking test results, and supplying standard program and software.
27	What is your estimate of the percentage of customers who really understand the pump test results? Do you take any specific actions to help customers understand the pump test results? PTID11, Linkage 9 Inserted to help explain issue why some feel trade allies do a better job at explaining pump test results and cost/benefit ratios.	Six of eight responded between 75-95%, one at 50%, one at 10%. Most said they explain the report.
28	Can you suggest changes in the program that would increase the likelihood that the customers would understand the pump test results? PTID11, Linkage P9	Six of seven relevant responses couldn't suggest any improvements. One suggested writing out the abbreviations (kWh, AF, etc.) to decode it for the customer, since many don't use these abbreviations much.
29	Do you think that the pump test results provide adequate information to help the customer make a decision whether or not to make pump repairs? If no, what else should be there? PIID 4 Linkage 18, PTID 11 Linkages 9, 10, and 11	Yes 100%

Q #	Question	Summary
30	What do you think is the key factor in a customer's decision to repair or not to repair the pump? Can the program do anything to influence that decision in a positive way? PTID11, Linkage P10 and 11	5 said economic analysis, 5 said pump test result or whether pump can deliver needs. Improvements included reducing paperwork, and giving a "good" rebate.
31	Some pump test results show good economic incentive for repairing a pump, yet customers don't repair them. Do you have any insight into typical reasons that they don't repair the pump under these conditions? (Don't read, but if appropriate ask if rebate is adequate.) PTID11, Linkage 10 and 13. Relevant to buy-down Hypothesis.	Main response (7/10) is couldn't afford it" or cash flow. Other were leased property and had other pumps to fill the gap. Suggestions to change the situation were increase incentive and low interest loans.
32	How much of a role do you believe the amount of the pump repair rebate has on a customer's decision? Does this decision depend on the size of the grower's operation? PTID11, Linkage 10, also Linkage 13. Relevant to buy-down Hypothesis.	About 60% of the responses said a large affect on the decision. Other responses said that it depended on the overall size of the rebate, how bad the pump was, and the size of the grower. There seemed to be consensus that the size of the grower was important to whether they decided to do it or not. Larger growers are more likely to do it because their cash flow is better.
33	General Comments	Four comments: good program keep it up (all), one said make the paperwork simpler.