Customer Energy Efficiency Program
Measurement and Evaluation Program

# TECHNICAL APPENDICES -- IMPACT EVALUATION OF PACIFIC GAS & ELECTRIC COMPANY'S 1996 AGRICULTURAL PROGRAMS ENERGY EFFICIENCY INCENTIVES PROGRAM: PUMPING AND RELATED END USE INDOOR LIGHTING END USE & ENERGY MANAGEMENT SERVICES PROGRAM

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***PG&E Study ID numbers:***
***354: Pumping and Related End Use***
***385: Indoor Lighting End Use***
***360: Energy Management Services***

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Measurement and Evaluation
Customer Energy Efficiency Policy & Evaluation Section
Pacific Gas and Electric Company
San Francisco, California



All inquiries should be directed to:

Lisa K. Lieu
Revenue Requirements
Pacific Gas and Electric Company
P. O. Box 770000, Mail Code B9A
San Francisco, CA 94177

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# 1996 AGRICULTURAL PROGRAM EVALUATION APPENDICES

# Appendix A - Self Report Analysis and Model Results

### *Overview*

As mentioned in the main body of the report, the focus of this approach is to determine whether the program participants would have installed the measures in the absence of the programs. Self-reported responses from the telephone survey of AEEI participants were used to find out whether customers would have installed the same measures if the program were not offered. Responses were then used to identify whether a customer is a free rider or not. After determining whether the customer as a free rider, a free-ridership model is developed to predict whether a customer is a free rider or not based on customer characteristics. The program effects are defined as one minus the average predicted free-ridership. Thus, this approach, approved through a CADMAC waiver, uses stated intentions regarding the role of the program in installing program measures, but it does not make use of a comparison group as required by the Protocols.

### *Methodology*

The following three questions from the participant survey were considered to define free-ridership.

1. Q15a (of participant survey). How important would the availability of a rebate be in your decision to install high efficiency equipment?
2. Q25 (of participant survey). Did you hear about PG&E's rebate program before or after you picked out the specific equipment to buy?
3. Q27 (of participant survey). If the PG&E rebate had not been available, how likely is it you would have installed the same energy-efficient equipment?

One option is to use the responses of only one of the above question. However, The Quality Assurance Guidelines For Statistical, Engineering, and Self-Report Methods for Estimating DSM Program Impacts states that "…. Using multiple questionnaire items (both quantitative and qualitative) to measure one construct is preferable to using only one item….". (Richard Ridge et. al. 1997). Therefore the option of using responses to only one question is not appropriate.

The second option is to use responses to more than one question. If responses to all the three questions or any two questions are used then, from the frequencies, we gather that free ridership is less than 5% for indoor lighting measures and less then 17% for the pumping and related end use. This implies a very high net-to-gross ratio for both end uses. However, since most of the customers are not free riders, it becomes almost impossible to develop a logistic regression model predicting free ridership. The reason for such low free ridership is due to inconsistent answers to two or more questions that were asked. There are two possible reasons for such inconsistencies. One possibility is that the respondent may want to give an answer that he thinks will be pleasing to the interviewer. The direction of this bias would be unclear – up or down, depending on what the respondent thinks the interviewer wants to hear. The second possibility is that some people will like to portray themselves in a positive light; e.g., they might like to think that they would have installed energy-efficient equipment without any incentive. This type of motivation could result in an artificially low net-to-gross ratio. To avoid such bias, we tried to identify the inconsistent responses by participants of the pumping and related and indoor lighting end uses.

In order to be conservative while estimating the net-to-gross ratio using self-report analysis, to pay attention to inconsistent responses, and to be able to develop a logistic regression model, we were forced to take the following approach to define free ridership.

Responses from following two questions were used.

1. Q15a (of participant survey). How important would the availability of a rebate be in your decision to install high efficiency equipment?
2. Q27 (of participant survey). If the PG&E rebate had not been available, how likely is it you would have installed the same energy-efficient equipment?

In this approach, all participating customers are assumed to be free riders. The participants with inconsistent responses are not considered free riders. For example, if customers responded to Q27 that they were very likely to have installed the same energy-efficient equipment even if the rebate was not offered to them, and responded to Q15a that availability of rebate is very important factor in deciding to install efficient equipment, they are not free riders.

For the pumping and related end use, 19 out of a total of 49 participants gave inconsistent responses and, therefore, are not considered free riders. For indoor lighting measures, 28 out of a total of 48 participants responded that they were very or somewhat likely to have implemented the same measures if the rebate was not offered and at the same time considered the availability of the rebate as very or somewhat important in deciding to implement efficient equipment. Thus, without estimating the predicted free-ridership, the apparent net-to-gross ratio for the pumping and related end use, using self-reports, is 39%. For the indoor lighting model, it is 58%. It is important to note that in using the self report analysis incorporating all three questions, the net-to-gross ratio are much higher than these. However, in order for us to be able to estimate a free-ridership model, we have selected the approach that gives us lower net-to-gross ratios and thereby leave some variation in responses. The free ridership model can be expressed as:

$$FR_i = \frac{\left(e^{(bZi)}\right)}{\left(1 + e^{(bZi)}\right)}$$

Where,

$FR_i$ = the probability that customer "i" is a free rider in the 1996 AEEI program,

$Z_i$ = a vector of explanatory variables that include factors affecting customer i's status as a free-rider or not a free-rider,

$\beta$ = a vector of estimated coefficients that maximizes $FR_i$

And the net-to-gross ratio for each end use is calculated as:

$$\begin{pmatrix} \text{Self Report} \\ \text{Net - To - Gross} \\ \text{Ratio for end use j} \end{pmatrix} = 1 - \begin{pmatrix} \text{Average Predicted Probability of} \\ \text{Free ridership for end use j} \end{pmatrix}$$

The model results that predict the probability of free ridership for both end uses and the data sources to get information on the variables used in the model are discussed in subsequent sections.

### *Data Sources*

Self-report analysis requires information on the stated intentions, particularly regarding what would the customer have done if the program is not offered. Further, to use these stated intentions, and model them to estimate the predicted probability of the customer being a free-rider, information is required on customer characteristics such as attitudes, beliefs, and opinions about conservation.

A free-ridership model for both end uses is specified assuming that each decision constitutes a unit. A total of 49 participants of the pumping and related end use and 48 participants of the indoor lighting end use were included in the analysis. Separate free-ridership models for the two end uses were estimated, using in each model only a subset of participants (decision-makers) who implemented efficient measures for that end use.

Mainly, two sources of information were used.

(1) Telephone Survey: For estimating free-ridership models, it was important to capture the effects of customer characteristics on the stated intention of the customer for a particular measure type. The combination of explanatory variables varied for end-use-specific free-ridership models. A set of customer characteristics was drawn from the information contained in the telephone surveys for participants. Repeated contact was avoided while collecting information via the telephone survey. A total of 67 participants were interviewed. Since 67 participants were involved in a total of 97 decisions, using 67 complete surveys, data for 97 decisions were simulated. Thus, the telephone survey information was available for a total of 97 customer decisions.

(2) Billing data: Billing data from PG&E provided information on the SIC code, kWh consumption, and the location of all the participants and nonparticipants. Billing data for the 97 surveyed customer decisions were pulled from the billing files provided by PG&E.

### *Model Diagnostics*

As in estimation of any statistical models, a coefficient was estimated for each explanatory variable. A positive coefficient in the free-ridership model indicates that the factor represented by the variable increases the probability that the customer is a free rider. A negative coefficient for a variable in the free-ridership model indicates that the factor represented by the variable decreases the probability that the customer is a free rider.

*Wald Chi-square* - As an indication of the explanatory power of each variable, a Wald-statistic was also produced for each coefficient. Wald Chi-square is computed as the square of the value obtained by dividing the parameter estimate by its standard error. As a general rule, the larger the magnitude of the Wald-statistic (Chi-square distribution), the greater the explanatory power of the variable. In particular, if the Wald-statistic has a magnitude exceeding 1.32, then the hypothesis that the coefficient is zero can be rejected at the seventy-five percent significance level.

*Percentage of Probabilities Correctly Predicted* - As part of the logistic procedures, SAS provides a concordant index that reflects the percentage of probabilities correctly predicted. This statistic helps assess the quality of the logistic model. In a relative sense, a model with higher values for the concordant index has a better predictive ability than a model with lower values for the concordant index.

*Max-rescaled Rsquare* - A rescaled generalized coefficient of determination (Max-rescaled RSquare) is a formal statistical test for the goodness-of-fit of the logistic regression model. It gives an objective measure of how well the specified model fits the data. The values of adjusted R-square can range between 0 and 1. As a general rule, a higher value of Max-rescaled RSquare indicates a better fit.

*Log Likelihood at zero and at convergence*. - Generally, it is expected that a binary choice model without any explanatory variables has less explanatory power than a model with an appropriate combination of explanatory variables reflecting the customer's characteristics. Hence, it is expected, that for any model, Log Likelihood at convergence (that model with parameter estimates that maximize the likelihood function) will be higher than the Log Likelihood at zero (that model with all parameter estimates set to zero). As a result, we can judge how well a particular combination of explanatory variables describes the customers' choices by comparing the Log Likelihood at convergence with the Log Likelihood at zero. The difference between these values indicates the explanatory power of the model with a higher difference suggesting a higher explanatory power.

The model results presented in the two exhibits were compared with the results of the many other alternative model specifications on the basis of the above mentioned criteria. The possibility of serious collinearity among any explanatory variables in all the models was also explored by examining the correlation matrix of the explanatory variables. The sensitivity of the results was tested for any possible collinearity. Variables with high correlation affected the estimated coefficients and the resultant net-to-gross ratios. Of the two variables with high correlation, one of the two variables was selected primarily on the basis of two criteria: (1) explanatory power of the variable as determined by the correlation with the dependent variable, and (2) conurbation to the predictive power of the model as measured by the percentage correctly predicted. Out of two highly correlated variables, the variable with higher explanatory power is preferred. The variable that contributes more to the predictive power as measured by concordant is preferred.

***Model Results.***

A logistic regression model predicting free ridership was developed for both the end uses. The dependent variable in the logit model was derived based on the observed inconsistency. Then a set of independent variables was used from the survey data to predict the probability of a customer being a free-rider. The model results are presented in the following exhibits.

*Pumping and related end use.* - As mentioned earlier, 19 out of a total of 49 participants for the pumping and related end use gave inconsistent responses and therefore are not free riders. The remaining 30 participants are defined as free riders. Using this as a binary indicator of free riders, a model was developed to predict the free-ridership for the pumping and related end use.

The results of the pumping and related end use free-ridership model is presented in Exhibit A.1.

**Exhibit A.1**
**Results of Free ridership Model for the Pumping and related End Use.**

| Explanatory Variables | Parameter Estimates | Wald Chi-Square |
|---|---|---|
| Intercept | 9.5* | 6.27 |
| Importance of improving the efficiency of the equipment at business site. | -2.36* | 2.18 |
| Dummy = 1 if primary source of information is a brochure in the mail or a bill insert | 2.24* | 3.62 |
| Familiarity with PG&E's energy efficiency programs. | -1.01 | 1.76 |
| Annual kWh usage category | -1.34* | 6.46 |
| Dummy=1 if the customer considers business operated as a company | -2.24* | 5.34 |
| Dummy =1 if a farm manager is the decision maker to install energy-efficient improvements | 2.68* | 3.58 |
| | | |
| Number of observations (i.e. participants) | 49 | |
| Percentage of probabilities correctly predicted (Concordant) | 92% | |
| Adjusted R square | 0.6 | |
| -2(LLR-LLU) | 31.7 | |

All the coefficients without brackets are statistically different from zero at 95% significance level. Those marked * are statistically different from zero at 99% significance level.

Results of the free ridership model for the pumping and related end use indicate that the model predicts the probability of a customer being a free rider correctly for 92% of the customers. The results indicated that:

- If the primary source of information regarding efficient equipment is a bill insert or a brochure in the mail, then customers are likely to be a free rider. Or if the decisions regarding efficient installations are taken by a farm manager, then customer is likely to be a free rider.
- Whereas if energy efficiency is important to the customers, if they are familiar with PG&E's programs, if the customers thought their company is managed as a company, or if the annual usage is high, then they are less likely to be free-riders. This also suggests that these customers are less likely to be consistent with their responses to the two questions. Using

estimated coefficients of this model, probability of free-ridership was predicted for each participant of the pumping and related end use. Then, free-ridership was calculated as the average predicted probabilities across all participants of the pumping and related end use. We found that the average predicted probability across all participants of the pumping and related end use is 0.62. This gives us a net-to-gross ratio of 38%.

*Indoor lighting end use.* - As mentioned earlier, 28 out of a total of 48 participants for the indoor lighting end use gave inconsistent responses and therefore are not free riders. The remaining 20 participants are defined as free riders. Using this as a binary indicator of free riders, a model was developed to predict the free-ridership for the indoor lighting end use.

The results of indoor lighting end use free ridership model is presented in ExhibitA.2.

**Exhibit A.2**
**Results of Free ridership Model for Indoor lighting End Use**

| Explanatory Variables | Parameter Estimates | Wald Chi-Square |
|---|---|---|
| Intercept | 10.00* | 2.85 |
| Importance of improving the efficiency of the equipment at business site. | 1.54* | 2.53 |
| Helpfulness of PG&E representative in making the customer aware of any programs | 0.72* | 2.69 |
| Number of times customer participated prior to 1996 | 0.48 | 1.35 |
| Dummy=1 if became aware about the program before customer started collecting information about new equipment | 2.09* | 2.51 |
| Dummy =1 if a packing plant, winery, or a dairy farm | 0.8 | 1.13 |
| Dummy=1 if the customer considers business operated as a company | -1.14* | 1.99 |
| Dummy=1 if the customer categorize the business small | -1.04 | 1.20 |
| | | |
| Number of observations (i.e. participants) | 47 | |
| Percentage of probabilities correctly predicted (Concordant) | 82% | |
| Adjusted R square | 0.4 | |
| -2(LLR-LLU) | 16.7 | |

All the coefficients without brackets are significantly different from zero at 75% significance level.

Those marked * are statistically different from zero at 99% significance level.

Results of the free ridership model for the indoor lighting end use indicate that the model predicts the probability of a customer being a free rider correctly for 82% of the customers. The results indicated that:

- If customers think their business is operated like a company, or if their business is small compared to other similar business, then they are less likely to be free riders.

- Whereas if energy efficiency is important to the customers, if they have participated in similar programs by PG&E prior to 1996, or if the customers became aware of the program before they started to collect the information regarding new equipment, then they are more likely to be free riders. This also suggests that these customers are likely to give consistent responses to survey questions. Using the estimated coefficients of this model, the probability of free-ridership was predicted for each participant of the indoor lighting end use. Then, the free-ridership was calculated as the average predicted probabilities across all participants of the indoor lighting end use. The resulting average predicted probability across all participants of the indoor lighting end use is 0.41. This produces a net-to-gross ratio of 59%.

The estimated net-to-gross ratios using the self-report analysis are presented in Exhibit A.3.

**Exhibit A.3**
**End Use Specific Net-To-Gross Ratios Using Self-Report Analysis**

| | Pumping and related | Indoor lighting |
|---|---|---|
| Estimate of net-to-gross | 38% | 59% |
| Confidence Interval* | 35%---92% | 6%---98% |

*Confidence interval around Self-Report net-to-gross is derived using consistency and inconsistency of the responses.

The net-to-gross ratio for the pumping and related end use suggests that, on average, six out of ten customer decisions would have installed efficient pumping and related measures without any incentive. Whereas, four out of ten customer decisions would have installed efficient indoor lighting measures without any incentive. The net-to-gross ratio for the indoor lighting end use is higher than that of the pumping and related end use. The range within which the self-report net-to-gross ratios vary is 57% for the pumping and related end use and 92% for the indoor lighting end use.

It is important to note that these self-report net-to-gross ratios are not used for filing purposes. The Protocol requires a contrasting of participants with a nonparticipant comparison group, and self-report analysis presented in this appendix does not compare participants with nonparticipants. Therefore, these results were not used for filing purposes.

# Appendix B - Final EEI Participant Telephone Survey with Response Frequencies

START OF SURVEY
TIME STARTED: **C208-211**

1. PG&E records indicate that (BUSINESS) implemented (MEASURE) and received a rebate in 1996. Is this correct? **C212-213**

   Yes ..... 11 (GO TO Q3)
   No ..... 12 (ASK Q2)

| Q1 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 67 | 100.0 | 67 | 100.0 |

IF NO, ASK:

2. Why is this incorrect (READ LIST)? **C214-215**

   You did not implement this measure ..... 11 (THANK AND TERM.)
   You did not receive a rebate for this measure ..... 12 (THANK AND TERM.
   We have the incorrect business or organization name ..... 13
   SPECIFY CORRECTION:_____
   We have the incorrect measure ..... 14
   SPECIFY CORRECTION:_____

   **(IF CODE 13 OR 14 CONTINUE AFTER GETTING CORRECT INFO.)**

| Q2 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|

Frequency Missing = 67

3. First, I would like to ask you some general questions about your business or organization. How would you classify your business or organization? (READ LIST AND ENTER ALL THAT APPLY) **"Yes" to item denoted by "1" in column. "No" denoted by "0" in column.**

| | | |
|---|---|---|
| a. General Farm | 11 | **C217** |
| b. Ranch | 12 | **C218** |
| c. Ornamental Nursery | 13 | **C219** |
| d. Indoor Crops | 14 | **C220** |
| e. Packing Plant | 15 | **C221** |
| f. Winery | 16 | **C222** |
| g. Dairy Farm | 17 | **C223** |
| h. Water District | 18 | **C224** |
| i. Other _____ Specify | 19 | **C225** |
| j. Don't Know (DO NOT READ) | 77 | **C226** |
| k. Refused (DO NOT READ) | 88 | **C227** |
| **l. Cold Storage** | **20** | **C228** |

| Q3A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 43 | 64.2 | 43 | 64.2 |
| 1 | 24 | 35.8 | 67 | 100.0 |

| Q3B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 57 | 85.1 | 57 | 85.1 |
| 1 | 10 | 14.9 | 67 | 100.0 |

| Q3C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 62 | 92.5 | 62 | 92.5 |
| 1 | 5 | 7.5 | 67 | 100.0 |

| Q3D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 64 | 95.5 | 64 | 95.5 |
| 1 | 3 | 4.5 | 67 | 100.0 |

| Q3E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 56 | 83.6 | 56 | 83.6 |
| 1 | 11 | 16.4 | 67 | 100.0 |

| Q3F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 66 | 98.5 | 66 | 98.5 |
| 1 | 1 | 1.5 | 67 | 100.0 |

| Q3G | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 64 | 95.5 | 64 | 95.5 |
| 1 | 3 | 4.5 | 67 | 100.0 |

| Q3H | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 59 | 88.1 | 59 | 88.1 |
| 1 | 8 | 11.9 | 67 | 100.0 |

| Q3I | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 59 | 88.1 | 59 | 88.1 |
| 1 | 8 | 11.9 | 67 | 100.0 |

Other responses

Vineyard (not a winery).
Trucking is a major part.
Government fire department.
Truck dealership.
Mushroom company.
Seed research company.
Parts distributor/diesel engines.
Public resources.

| Q3J | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 67 | 100.0 | 67 | 100.0 |

| Q3K | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 67 | 100.0 | 67 | 100.0 |

| Q3L | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 65 | 97.0 | 65 | 97.0 |
| 1 | 2 | 3.0 | 67 | 100.0 |

4. Compared to other businesses or organizations similar to yours, would you categorize this business or organization as small, medium or large? **C230-231**

Small ..... 11
Medium ..... 12
Large ..... 13
Don't Know ..... 77
Refused ..... 88

| Q4 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 14 | 20.9 | 14 | 20.9 |
| 12 | 30 | 44.8 | 44 | 65.7 |
| 13 | 22 | 32.8 | 66 | 98.5 |
| 77 | 1 | 1.5 | 67 | 100.0 |

5. How long has your company or organization been operating at this location? (READ LIST) **C232-233**

1 to 3 years ..... 11
4 to 10 years ..... 12
More than 10 years ..... 13
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q5 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 7.5 | 5 | 7.5 |
| 12 | 8 | 11.9 | 13 | 19.4 |
| 13 | 54 | 80.6 | 67 | 100.0 |

**ASK EVERYONE:**

6. Would you consider your business or organization operated by a family or a company? **C234-235**

Family ..... 11
Company ..... 12
Not applicable ..... 13
Don't Know ..... 77
Refused ..... 88

| Q6 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 39 | 58.2 | 39 | 58.2 |
| 12 | 23 | 34.3 | 62 | 92.5 |
| 13 | 5 | 7.5 | 67 | 100.0 |

**IF PUMP SAMPLE (C102=1), ASK:**

7. How many pumps do you have under your control? ___ **C236-238** ___ (SPECIFY #)

| Q7 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 1 | 3.0 | 1 | 3.0 |
| 2 | 1 | 3.0 | 2 | 6.1 |
| 3 | 3 | 9.1 | 5 | 15.2 |
| 4 | 3 | 9.1 | 8 | 24.2 |
| 5 | 1 | 3.0 | 9 | 27.3 |
| 6 | 1 | 3.0 | 10 | 30.3 |
| 7 | 3 | 9.1 | 13 | 39.4 |
| 8 | 1 | 3.0 | 14 | 42.4 |
| 10 | 2 | 6.1 | 16 | 48.5 |
| 12 | 1 | 3.0 | 17 | 51.5 |
| 16 | 1 | 3.0 | 18 | 54.5 |
| 20 | 1 | 3.0 | 19 | 57.6 |
| 25 | 1 | 3.0 | 20 | 60.6 |
| 28 | 1 | 3.0 | 21 | 63.6 |
| 30 | 2 | 6.1 | 23 | 69.7 |
| 36 | 1 | 3.0 | 24 | 72.7 |
| 40 | 2 | 6.1 | 26 | 78.8 |
| 45 | 1 | 3.0 | 27 | 81.8 |
| 60 | 1 | 3.0 | 28 | 84.8 |
| 75 | 1 | 3.0 | 29 | 87.9 |
| 80 | 1 | 3.0 | 30 | 90.9 |
| 84 | 1 | 3.0 | 31 | 93.9 |
| 100 | 1 | 3.0 | 32 | 97.0 |
| 200 | 1 | 3.0 | 33 | 100.0 |

Frequency Missing = 34

8. On average, how many months per year are the pumps in use? (READ LIST) **C239-240**

Less than 3 months per year ..... 11
3-6 months per year ..... 12
7-9 months per year ..... 13
Year round ..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q8 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 7 | 21.2 | 7 | 21.2 |
| 13 | 15 | 45.5 | 22 | 66.7 |
| 14 | 11 | 33.3 | 33 | 100.0 |

Frequency Missing = 34

9. If you grow crops, do you grow annual or permanent crops? **C241-242**

Annual ..... 11
Permanent ..... 12
Both annual and permanent ..... 13

Don't grow crops..... 14
Don't Know..... 77
Refused..... 88

**(GO TO Q13)**

| Q9 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 8 | 24.2 | 8 | 24.2 |
| 12 | 5 | 15.2 | 13 | 39.4 |
| 13 | 12 | 36.4 | 25 | 75.8 |
| 14 | 6 | 18.2 | 31 | 93.9 |
| 77 | 2 | 6.1 | 33 | 100.0 |

Frequency Missing = 34

**IF LIGHTING SAMPLE (C102=2), ASK:**

Next I'd like to ask you a few questions about your site. If a residence is included in the accounts for this site, please exclude the residence when you answer the following questions.

10. In what year was your facility built? **C243-246** (SPECIFY YEAR)

| Q10 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 000& | 1 | 2.9 | 1 | 2.9 |
| 0096 | 1 | 2.9 | 2 | 5.9 |
| 1926 | 1 | 2.9 | 3 | 8.8 |
| 1929 | 1 | 2.9 | 4 | 11.8 |
| 1930 | 2 | 5.9 | 6 | 17.6 |
| 1932 | 1 | 2.9 | 7 | 20.6 |
| 1940 | 1 | 2.9 | 8 | 23.5 |
| 1948 | 1 | 2.9 | 9 | 26.5 |
| 1956 | 1 | 2.9 | 10 | 29.4 |
| 1957 | 2 | 5.9 | 12 | 35.3 |
| 1958 | 1 | 2.9 | 13 | 38.2 |
| 1960 | 2 | 5.9 | 15 | 44.1 |
| 1962 | 1 | 2.9 | 16 | 47.1 |
| 1967 | 2 | 5.9 | 18 | 52.9 |
| 1972 | 3 | 8.8 | 21 | 61.8 |
| 1973 | 1 | 2.9 | 22 | 64.7 |
| 1974 | 1 | 2.9 | 23 | 67.6 |
| 1977 | 1 | 2.9 | 24 | 70.6 |
| 1978 | 4 | 11.8 | 28 | 82.4 |
| 1979 | 2 | 5.9 | 30 | 88.2 |
| 1989 | 1 | 2.9 | 31 | 91.2 |
| 1993 | 1 | 2.9 | 32 | 94.1 |
| 1994 | 1 | 2.9 | 33 | 97.1 |
| 1996 | 1 | 2.9 | 34 | 100.0 |

Frequency Missing = 33

11. Was the total area of the facility altered in 1995 or 1996? **C247-248**

Yes..... 11
No..... 12

Don't Know..... 77
Refused ..... 88

| Q11 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 7 | 20.6 | 7 | 20.6 |
| 12 | 24 | 70.6 | 31 | 91.2 |
| 77 | 3 | 8.8 | 34 | 100.0 |

Frequency Missing = 33

12. Approximately, what percent of the time are the lights at your facility on, annually?

___C249-251__ (SPECIFY %)

**(GO TO Q13)**

| Q12 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 2 | 5.9 | 2 | 5.9 |
| 005 | 1 | 2.9 | 3 | 8.8 |
| 020 | 1 | 2.9 | 4 | 11.8 |
| 025 | 1 | 2.9 | 5 | 14.7 |
| 030 | 2 | 5.9 | 7 | 20.6 |
| 033 | 1 | 2.9 | 8 | 23.5 |
| 035 | 2 | 5.9 | 10 | 29.4 |
| 040 | 5 | 14.7 | 15 | 44.1 |
| 045 | 1 | 2.9 | 16 | 47.1 |
| 050 | 3 | 8.8 | 19 | 55.9 |
| 051 | 1 | 2.9 | 20 | 58.8 |
| 060 | 2 | 5.9 | 22 | 64.7 |
| 065 | 2 | 5.9 | 24 | 70.6 |
| 067 | 1 | 2.9 | 25 | 73.5 |
| 070 | 2 | 5.9 | 27 | 79.4 |
| 075 | 3 | 8.8 | 30 | 88.2 |
| 080 | 2 | 5.9 | 32 | 94.1 |
| 095 | 1 | 2.9 | 33 | 97.1 |
| 100 | 1 | 2.9 | 34 | 100.0 |

Frequency Missing = 33

**ASK EVERYONE:**

13. Typically, who decides to install energy-efficient improvements? (READ LIST) (ENTER ALL THAT APPLY) **"Yes" to item denoted by "1" in column. "No" denoted by "0" in column.**

| | | |
|---|---|---|
| a. The owner(s) | 11 | **C252** |
| b. A partner or partners | 12 | **C253** |
| c. The farm manager | 13 | **C254** |
| d. An Ag Engineer or a consultant | 14 | **C255** |
| e. It's a group decision process | 15 | **C256** |
| f. Other (DO NOT READ)_____ (Specify) | 16 | **C257** |
| g. Don't Know (DO NOT READ) | 77 | **C258** |
| h. Refused (DO NOT READ) | 88 | **C259** |
| **i. Site/plant/operations manager** | **17** | **C260** |

| Q13A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 37 | 55.2 | 37 | 55.2 |
| 1 | 30 | 44.8 | 67 | 100.0 |

| Q13B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 64 | 95.5 | 64 | 95.5 |
| 1 | 3 | 4.5 | 67 | 100.0 |

| Q13C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 56 | 83.6 | 56 | 83.6 |
| 1 | 11 | 16.4 | 67 | 100.0 |

| Q13D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 66 | 98.5 | 66 | 98.5 |
| 1 | 1 | 1.5 | 67 | 100.0 |

| Q13E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 48 | 71.6 | 48 | 71.6 |
| 1 | 19 | 28.4 | 67 | 100.0 |

| Q13F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 64 | 95.5 | 64 | 95.5 |
| 1 | 3 | 4.5 | 67 | 100.0 |

| Q13G | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 67 | 100.0 | 67 | 100.0 |

| Q13H | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 67 | 100.0 | 67 | 100.0 |

| Q13I | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 62 | 92.5 | 62 | 92.5 |
| 1 | 5 | 7.5 | 67 | 100.0 |

Other responses

Sons/Vice Presidents.
Board of Directors.
Board of Directors.

14. Which of these financial methods do you typically use to evaluate energy-efficiency improvements? (READ LIST) **C263-264**

Simple payback ..... 11
Lowest First Cost..... 12
A more complex financial analysis..... 13
Don't know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q14 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 36 | 53.7 | 36 | 53.7 |
| 12 | 12 | 17.9 | 48 | 71.6 |
| 13 | 17 | 25.4 | 65 | 97.0 |
| 77 | 2 | 3.0 | 67 | 100.0 |

15. How would you rate the importance of improving the efficiency of the equipment at your site? (READ LIST) **C265-266**

Very important ..... 11
Somewhat important ..... 12
Not too important ..... 13
Not at all important ..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q15 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 51 | 76.1 | 51 | 76.1 |
| 12 | 15 | 22.4 | 66 | 98.5 |
| 13 | 1 | 1.5 | 67 | 100.0 |

**ASK EVERYONE:**

Please rate the importance of the following factors in any decision to install high-efficiency equipment.

16. How important would (ITEM) be in your decision to install high-efficiency equipment? Would that be: (READ LIST)?

| | | | | | (DO NOT READ) | | |
|---|---|---|---|---|---|---|---|
| | Very Important | Somewhat Important | Not too Important | Not at all Important | Don't Know | Refused | |
| a. The availability of a rebate | 11 | 12 | 13 | 14 | 77 | 88 | **C308-309** |
| b. The low performance of current equipment | 11 | 12 | 13 | 14 | 77 | 88 | **C310-311** |
| c. A low purchase cost | 11 | 12 | 13 | 14 | 77 | 88 | **C312-313** |
| d. An expected reduction of operating costs | 11 | 12 | 13 | 14 | 77 | 88 | **C314-315** |
| e. A low maintenance cost | 11 | 12 | 13 | 14 | 77 | 88 | **C316-317** |
| f. A lower energy bill | 11 | 12 | 13 | 14 | 77 | 88 | **C318-319** |
| g. The questionable reliability of your current equipment | 11 | 12 | 13 | 14 | 77 | 88 | **C320-321** |
| h. Having a lower environmental impact | 11 | 12 | 13 | 14 | 77 | 88 | **C322-323** |
| i. Improving the resale value of the property | 11 | 12 | 13 | 14 | 77 | 88 | **C324-325** |
| j. The general health of the economy | 11 | 12 | 13 | 14 | 77 | 88 | **C326-327** |

| Q16A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 36 | 53.7 | 36 | 53.7 |
| 12 | 27 | 40.3 | 63 | 94.0 |
| 13 | 4 | 6.0 | 67 | 100.0 |

| Q16B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 42 | 62.7 | 42 | 62.7 |
| 12 | 19 | 28.4 | 61 | 91.0 |
| 13 | 4 | 6.0 | 65 | 97.0 |
| 14 | 2 | 3.0 | 67 | 100.0 |

| Q16C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 38 | 56.7 | 38 | 56.7 |
| 12 | 23 | 34.3 | 61 | 91.0 |
| 13 | 4 | 6.0 | 65 | 97.0 |
| 14 | 2 | 3.0 | 67 | 100.0 |

| Q16D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 49 | 73.1 | 49 | 73.1 |
| 12 | 15 | 22.4 | 64 | 95.5 |
| 13 | 2 | 3.0 | 66 | 98.5 |
| 14 | 1 | 1.5 | 67 | 100.0 |

| Q16E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 47 | 70.1 | 47 | 70.1 |
| 12 | 16 | 23.9 | 63 | 94.0 |
| 13 | 4 | 6.0 | 67 | 100.0 |

| Q16F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 56 | 83.6 | 56 | 83.6 |
| 12 | 10 | 14.9 | 66 | 98.5 |
| 13 | 1 | 1.5 | 67 | 100.0 |

| Q16G | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 38 | 56.7 | 38 | 56.7 |
| 12 | 25 | 37.3 | 63 | 94.0 |
| 13 | 3 | 4.5 | 66 | 98.5 |
| 77 | 1 | 1.5 | 67 | 100.0 |

| Q16H | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 21 | 31.3 | 21 | 31.3 |
| 12 | 33 | 49.3 | 54 | 80.6 |
| 13 | 7 | 10.4 | 61 | 91.0 |
| 14 | 5 | 7.5 | 66 | 98.5 |
| 77 | 1 | 1.5 | 67 | 100.0 |

| Q16I | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 11 | 16.4 | 11 | 16.4 |
| 12 | 26 | 38.8 | 37 | 55.2 |
| 13 | 13 | 19.4 | 50 | 74.6 |
| 14 | 16 | 23.9 | 66 | 98.5 |
| 77 | 1 | 1.5 | 67 | 100.0 |

| Q16J | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 15 | 22.4 | 15 | 22.4 |
| 12 | 31 | 46.3 | 46 | 68.7 |
| 13 | 13 | 19.4 | 59 | 88.1 |
| 14 | 6 | 9.0 | 65 | 97.0 |
| 77 | 2 | 3.0 | 67 | 100.0 |

Now I want to ask you some questions about your current and or previous participation in PG&E programs and your PG&E service representative.

17. How familiar are you with PG&E's energy-efficiency programs? Would you say you are: (READ LIST)? **C328-329**

Very familiar ..... 11
Somewhat familiar ..... 12
Not too familiar ..... 13
Not at all familiar ..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q17 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 20 | 29.9 | 20 | 29.9 |
| 12 | 36 | 53.7 | 56 | 83.6 |
| 13 | 9 | 13.4 | 65 | 97.0 |
| 14 | 2 | 3.0 | 67 | 100.0 |

18. What are the primary sources of advice and information you use when planning to invest in energy using equipment? (READ LIST AND ENTER ALL THAT APPLY).

**"Yes" to item denoted by "1" in column. "No" denoted by "0" in column.**

| | | |
|---|---|---|
| a. A PG&E service representative | 11 | **C331** |
| b. A PG&E brochure in the mail or a bill insert | 12 | **C332** |
| c. A vendor or contractor | 13 | **C333** |
| d. General media like television, radio, or the newspaper | 14 | **C334** |
| e. Word of mouth | 15 | **C335** |
| f. Don't Know (DO NOT READ) | 77 | **C336** |
| g. Refused (DO NOT READ) | 88 | **C337** |

| Q18A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 16 | 23.9 | 16 | 23.9 |
| 1 | 51 | 76.1 | 67 | 100.0 |

| Q18B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 47 | 70.1 | 47 | 70.1 |
| 1 | 20 | 29.9 | 67 | 100.0 |

| Q18C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 31 | 46.3 | 31 | 46.3 |
| 1 | 36 | 53.7 | 67 | 100.0 |

| Q18D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 60 | 89.6 | 60 | 89.6 |
| 1 | 7 | 10.4 | 67 | 100.0 |

| Q18E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 44 | 65.7 | 44 | 65.7 |
| 1 | 23 | 34.3 | 67 | 100.0 |

| Q18F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 67 | 100.0 | 67 | 100.0 |

| Q18G | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 67 | 100.0 | 67 | 100.0 |

19. How helpful was your PG&E representative in: (ITEM). (READ LIST.)

| | | | | | (DO NOT READ) | | |
|---|---|---|---|---|---|---|---|
| | Very Helpful | Somewhat Helpful | Not too Helpful | Not at all Helpful | Don't now | Refused | |
| a. Making you aware of any programs | 11 | 12 | 13 | 14 | 77 | 88 | **C342-343** |
| b. Letting you know energy-efficient equipment options | 11 | 12 | 13 | 14 | 77 | 88 | **C344-345** |

| Q19A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 49 | 73.1 | 49 | 73.1 |
| 12 | 9 | 13.4 | 58 | 86.6 |
| 13 | 7 | 10.4 | 65 | 97.0 |
| 14 | 2 | 3.0 | 67 | 100.0 |

| Q19B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 36 | 53.7 | 36 | 53.7 |
| 12 | 16 | 23.9 | 52 | 77.6 |
| 13 | 9 | 13.4 | 61 | 91.0 |
| 14 | 1 | 1.5 | 62 | 92.5 |
| 77 | 5 | 7.5 | 67 | 100.0 |

**ASK EVERYONE:**

20. Within the past two years and before you participated in the retrofit program, did you have a pump test or a site survey done by PG&E?

Yes ..... 11 **C346-347**
No ..... 12
Don't Know ..... 77
Refused ..... 88

| Q20 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 41 | 61.2 | 41 | 61.2 |
| 12 | 24 | 35.8 | 65 | 97.0 |
| 77 | 2 | 3.0 | 67 | 100.0 |

21. How many times did you participate in PG&E's energy-efficiency programs before 1996? (READ LIST) ..... **C348-349**

Once ..... 11
Twice ..... 12
Several times ..... 13
Never ..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q21 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 9 | 13.4 | 9 | 13.4 |
| 12 | 11 | 16.4 | 20 | 29.9 |
| 13 | 27 | 40.3 | 47 | 70.1 |
| 14 | 16 | 23.9 | 63 | 94.0 |
| 77 | 4 | 6.0 | 67 | 100.0 |

22. How many times did PG&E's service representative contact you before 1996? (READ LIST) ..... **C350-351**

Once ..... 11
Twice ..... 12
Several times ..... 13
Never ..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q22 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 1.5 | 1 | 1.5 |
| 12 | 6 | 9.0 | 7 | 10.4 |
| 13 | 41 | 61.2 | 48 | 71.6 |
| 14 | 16 | 23.9 | 64 | 95.5 |
| 77 | 3 | 4.5 | 67 | 100.0 |

**ASK EVERYONE:**

23. Did you hear about PG&E's rebate program before or after you began thinking about replacing your equipment?.....**C352-353**

Before ..... 11 (GO TO Q27)
After..... 12 (ASK Q24)
Don't Know..... 77 (ASK Q24)
Refused ..... 88 (GO TO Q27)

| Q23 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 49 | 73.1 | 49 | 73.1 |
| 12 | 18 | 26.9 | 67 | 100.0 |

**IF Q23 = "AFTER" OR "DON'T KNOW," ASK:**

24. Did you hear about PG&E's rebate program before or after you started to look for or collect information about the new equipment? **C354-355**

Before.....11 (GO TO Q27)
After.....12 (ASK Q25)
Don't Know.....77 (ASK Q25)
Refused.....88 (GO TO Q27)

| Q24 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 6 | 33.3 | 6 | 33.3 |
| 12 | 12 | 66.7 | 18 | 100.0 |

Frequency Missing = 49

**IF Q24 = "AFTER" OR "DON'T KNOW," ASK:**

25. Did you hear about PG&E's rebate program before or after you picked out the specific equipment to buy? **C356-357**

Before.....11 (GO TO Q27)
After.....12 (ASK Q26)
Don't Know.....77 (ASK Q26)
Refused.....88 (GO TO Q27)

| Q25 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 33.3 | 4 | 33.3 |
| 12 | 8 | 66.7 | 12 | 100.0 |

Frequency Missing = 55

**IF Q25 = "AFTER" OR "DON'T KNOW," ASK:**

26. Did you hear about PG&E's rebate program before or after you replaced the equipment? **C358-359**

Before.....11
After.....12
Don't Know.....77
Refused.....88

(GO TO Q27)

| Q26 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 62.5 | 5 | 62.5 |
| 12 | 3 | 37.5 | 8 | 100.0 |

Frequency Missing = 59

**ASK EVERYONE**:

27. If the PG&E rebate had not been available, how likely is it you would have installed the same energy-efficient equipment? (READ LIST) ..... **C360-361**

Very likely ..... 11
Somewhat likely ..... 12
Not too likely ..... 13
Not at all likely ..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q27 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 30 | 44.8 | 30 | 44.8 |
| 12 | 22 | 32.8 | 52 | 77.6 |
| 13 | 7 | 10.4 | 59 | 88.1 |
| 14 | 8 | 11.9 | 67 | 100.0 |

**ASK EVERYONE**:

28. How long did you take to decide to participate after becoming aware of the PG&E rebate program? (READ LIST) ..... **C362-363**

Less than 6 months ..... 11
6-9 months ..... 12
9-12 months ..... 13
More than a year ..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q28 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 52 | 77.6 | 52 | 77.6 |
| 12 | 10 | 14.9 | 62 | 92.5 |
| 13 | 4 | 6.0 | 66 | 98.5 |
| 77 | 1 | 1.5 | 67 | 100.0 |

The last set of questions I have for you are questions about energy-efficient equipment you may have installed in 1996 and for which you did not get a rebate.

29. After getting a rebate in 1996, have you repaired any deep well pumps without applying for a rebate? .....**C364-365**

Yes.....11 (ASK Q30)
No.....12 (GO TO Q34)
Don't Know.....77 (GO TO Q34)
Refused.....88 (GO TO Q34)

| Q29 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 11 | 16.4 | 11 | 16.4 |
| 12 | 55 | 82.1 | 66 | 98.5 |
| 77 | 1 | 1.5 | 67 | 100.0 |

**IF YES, ASK:**

30. How many deep well pumps did you repair without a rebate? __**C366-368**__ (SPECIFY #)

| Q30 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 3 | 27.3 | 3 | 27.3 |
| 2 | 4 | 36.4 | 7 | 63.6 |
| 3 | 4 | 36.4 | 11 | 100.0 |

Frequency Missing = 56

31. Why did you repair these non-rebated pumps? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | **C408-409** |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | **C410-411** |
| c. You were worried about equipment reliability | 11 | 12 | 77 | 88 | **C412-413** |
| d. Your previous experience with pump repairs | 11 | 12 | 77 | 88 | **C414-415** |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | **C416-417** |

| Q31A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 8 | 72.7 | 8 | 72.7 |
| 12 | 3 | 27.3 | 11 | 100.0 |

Frequency Missing = 56

| Q31B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 7 | 63.6 | 7 | 63.6 |
| 12 | 4 | 36.4 | 11 | 100.0 |

Frequency Missing = 56

| Q31C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 45.5 | 5 | 45.5 |
| 12 | 6 | 54.5 | 11 | 100.0 |

Frequency Missing = 56

| Q31D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 36.4 | 4 | 36.4 |
| 12 | 7 | 63.6 | 11 | 100.0 |

Frequency Missing = 56

| Q31E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 11 | 100.0 | 11 | 100.0 |

Frequency Missing = 56

32. Why didn't you apply for a rebate? (READ LIST) ..... **C418-419**

The rebate was too small ..... 11
It was too much of a hassle ..... 12
It was too late to apply ..... 13
You did not think about it ..... 14
You did not know about it ..... 15
Other (SPECIFY) _____ ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q32 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 18.2 | 2 | 18.2 |
| 13 | 1 | 9.1 | 3 | 27.3 |
| 14 | 2 | 18.2 | 5 | 45.5 |
| 15 | 3 | 27.3 | 8 | 72.7 |
| 16 | 3 | 27.3 | 11 | 100.0 |

Frequency Missing = 56

Other responses:

Did not know if it was still in effect after 4 or 5 months
Not covered under the program
No rebate available for this

33. Would you have gotten your non-rebated pumps repaired if you had not received a rebate in 1996? ..... **C420-421**

Yes ..... 11
No ..... 12
Don't Know ..... 77
Refused ..... 88

| Q33 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 10 | 90.9 | 10 | 90.9 |
| 12 | 1 | 9.1 | 11 | 100.0 |

Frequency Missing = 56

**ASK EVERYONE**:

34. After getting a rebate in 1996, have you installed any low pressure sprinkler nozzles without applying for a rebate? **C422-423**

Yes ..... 11 (ASK Q35)
No ..... 12 (GO TO Q41)
Don't Know ..... 77 (GO TO Q41)
Refused ..... 88 (GO TO Q41)

| Q34 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 4.5 | 3 | 4.5 |
| 12 | 62 | 92.5 | 65 | 97.0 |
| 77 | 2 | 3.0 | 67 | 100.0 |

**IF YES, ASK:**

35. How many low pressure sprinkler nozzles did you install without a rebate? **C424-427** (SPECIFY #)

| Q35 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0010 | 1 | 33.3 | 1 | 33.3 |
| 0250 | 1 | 33.3 | 2 | 66.7 |
| 1000 | 1 | 33.3 | 3 | 100.0 |

Frequency Missing = 64

36. Of these, how many replaced other sprinkler nozzles? **C708-711** (SPECIFY #)

| Q36 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 10 | 1 | 33.3 | 1 | 33.3 |
| 250 | 1 | 33.3 | 2 | 66.7 |
| 1000 | 1 | 33.3 | 3 | 100.0 |

Frequency Missing = 64

37. Why did you install these non-rebated low pressure sprinkler nozzles? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | C430-431 |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | C432-433 |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | C434-435 |

| | | | | | |
|---|---|---|---|---|---|
| d. Your previous experience with the energy efficiency of low pressure nozzles | 11 | 12 | 77 | 88 | C436-437 |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | C438-439 |

| Q37A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 33.3 | 1 | 33.3 |
| 12 | 2 | 66.7 | 3 | 100.0 |

Frequency Missing = 64

| Q37B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 100.0 | 3 | 100.0 |

Frequency Missing = 64

| Q37C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 66.7 | 2 | 66.7 |
| 12 | 1 | 33.3 | 3 | 100.0 |

Frequency Missing = 64

| Q37D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 2 | 66.7 | 2 | 66.7 |
| 77 | 1 | 33.3 | 3 | 100.0 |

Frequency Missing = 64

| Q37E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 33.3 | 1 | 33.3 |
| 12 | 1 | 33.3 | 2 | 66.7 |
| 77 | 1 | 33.3 | 3 | 100.0 |

Frequency Missing = 64

Other responses:

To save on utility bills

38. Why didn't you apply for a rebate? (READ LIST) ..... **C440-441**

The rebate was too small ..... 11
It was too much of a hassle ..... 12
It was too late to apply ..... 13
You did not think about it ..... 14
You did not know about it ..... 15
Other (SPECIFY) _____ ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88
**The rebate was too small AND it was too much of a hassle ..... 19**

| Q38 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 15 | 2 | 66.7 | 2 | 66.7 |
| 19 | 1 | 33.3 | 3 | 100.0 |

Frequency Missing = 64

39. Would you have installed these non-rebated low pressure sprinkler nozzles if you had not received a rebate in 1996?..... **C442-443**

Yes ..... 11
No..... 12
Don't Know ..... 77
Refused..... 88

| Q39 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 100.0 | 3 | 100.0 |

Frequency Missing = 64

40. How did you <u>first</u> learn about low pressure sprinkler nozzles? (READ LIST) **C444-445**

You were contacted by someone at PG&E ..... 11
You were contacted by a contractor or vendor ..... 12
Through media contact such as
a bill insert, TV, radio, or brochure ..... 13
From word of mouth ..... 14
From previously participating in a program ..... 15
Other (DO NOT READ) ..... 16
Don't Know (DO NOT READ)..... 77
Refused (DO NOT READ)..... 88

| Q40 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 33.3 | 1 | 33.3 |
| 12 | 2 | 66.7 | 3 | 100.0 |

Frequency Missing = 64

**ASK EVERYONE**:

41. After getting a rebate in 1996, have you converted any sprinkler systems to micro irrigation systems or installed any new micro irrigation systems without applying for a rebate? **C446-447**

Yes..... 11 (ASK Q42)
No ..... 12 (GO TO Q48)
Don't Know..... 77 (GO TO Q48)
Refused ..... 88 (GO TO Q48)

| Q41 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 10 | 14.9 | 10 | 14.9 |
| 12 | 54 | 80.6 | 64 | 95.5 |
| 77 | 3 | 4.5 | 67 | 100.0 |

**IF YES, ASK:**

42. How many acres did you convert or install? **C448-450** (# OF ACRES)

| Q42 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 001 | 2 | 20.0 | 2 | 20.0 |
| 005 | 1 | 10.0 | 3 | 30.0 |
| 008 | 1 | 10.0 | 4 | 40.0 |
| 010 | 1 | 10.0 | 5 | 50.0 |
| 025 | 1 | 10.0 | 6 | 60.0 |
| 032 | 1 | 10.0 | 7 | 70.0 |
| 035 | 1 | 10.0 | 8 | 80.0 |
| 150 | 1 | 10.0 | 9 | 90.0 |
| 400 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 57

43. Of these, how many acres replaced old sprinkler systems? **C451-453** (# OF ACRES)

| Q43 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 000 | 3 | 30.0 | 3 | 30.0 |
| 001 | 2 | 20.0 | 5 | 50.0 |
| 005 | 1 | 10.0 | 6 | 60.0 |
| 010 | 1 | 10.0 | 7 | 70.0 |
| 032 | 1 | 10.0 | 8 | 80.0 |
| 035 | 1 | 10.0 | 9 | 90.0 |
| 100 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 57

44. Why did you install the micro irrigation system? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | **C454-455** |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | **C456-457** |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | **C458-459** |
| d. Your previous experience with the energy efficiency of new equipment | 11 | 12 | 77 | 88 | **C460-461** |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | **C462-463** |
| **f. New installation/new building/expansion** | **11** | **12** | **Not applicable** | | **C714-715** |

| Q44A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 9 | 90.0 | 9 | 90.0 |
| 77 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 57

| Q44B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 30.0 | 3 | 30.0 |
| 12 | 6 | 60.0 | 9 | 90.0 |
| 77 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 57

| Q44C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 40.0 | 4 | 40.0 |
| 12 | 5 | 50.0 | 9 | 90.0 |
| 77 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 57

| Q44D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 30.0 | 3 | 30.0 |
| 12 | 7 | 70.0 | 10 | 100.0 |

Frequency Missing = 57

| Q44E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 50.0 | 5 | 50.0 |
| 12 | 5 | 50.0 | 10 | 100.0 |

Frequency Missing = 57

Other Responses:
Better production, ease of operation, and efficiency
New Planning
Labor savings
Better health of crops
Water conservation / better crop growth

| Q44F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 30.0 | 3 | 30.0 |
| 12 | 7 | 70.0 | 10 | 100.0 |

Frequency Missing = 57

45. Why didn't you apply for a rebate? (READ LIST).....**C464-465**

The rebate was too small.....11
It was too much of a hassle.....12
It was too late to apply.....13
You did not think about it.....14
You did not know about it.....15
Other (SPECIFY) _____.....16
Don't Know (DO NOT READ).....77
Refused (DO NOT READ).....88

| Q45 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 20.0 | 2 | 20.0 |
| 14 | 3 | 30.0 | 5 | 50.0 |
| 15 | 4 | 40.0 | 9 | 90.0 |
| 16 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 57

Other Responses
Still in process

46. Would you have installed the non-rebated micro irrigation system if you had not received a rebate in 1996? .....**C466-467**

Yes.....11
No.....12
Don't Know.....77
Refused.....88

| Q46 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 10 | 100.0 | 10 | 100.0 |

Frequency Missing = 57

47. How did you <u>first</u> learn about micro irrigation systems? (READ LIST) **C468-469**

You were contacted by someone at PG&E.....11
You were contacted by a contractor or vendor.....12
Through media contact such as
a bill insert, TV, radio, or brochure.....13
From word of mouth.....14
From previously participating in a program.....15
Other (DO NOT READ).....16
Don't Know (DO NOT READ).....77
Refused (DO NOT READ).....88

| Q47 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 10.0 | 1 | 10.0 |
| 12 | 2 | 20.0 | 3 | 30.0 |
| 13 | 2 | 20.0 | 5 | 50.0 |
| 14 | 2 | 20.0 | 7 | 70.0 |
| 15 | 1 | 10.0 | 8 | 80.0 |
| 16 | 1 | 10.0 | 9 | 90.0 |
| 77 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 57

**ASK EVERYONE**:

48. After getting a rebate in 1996, have you installed any compact fluorescent lamps without applying for a rebate? **C470-471**

Yes..... 11 (ASK Q49)
No..... 12 (GO TO Q55)
Don't Know..... 77 (GO TO Q55)
Refused..... 88 (GO TO Q55)

| Q48 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 7 | 10.4 | 7 | 10.4 |
| 12 | 58 | 86.6 | 65 | 97.0 |
| 77 | 2 | 3.0 | 67 | 100.0 |

**IF YES, ASK:**

49. How many compact fluorescent lamps did you install without a rebate? **C472-474** (SPECIFY #)

| Q49 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 005 | 2 | 28.6 | 2 | 28.6 |
| 010 | 1 | 14.3 | 3 | 42.9 |
| 012 | 1 | 14.3 | 4 | 57.1 |
| 024 | 1 | 14.3 | 5 | 71.4 |
| 050 | 1 | 14.3 | 6 | 85.7 |
| 300 | 1 | 14.3 | 7 | 100.0 |

Frequency Missing = 60

50. Of these, how many replaced old lamps? **C475-477** (SPECIFY #)

| Q50 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 002 | 1 | 14.3 | 1 | 14.3 |
| 005 | 1 | 14.3 | 2 | 28.6 |
| 010 | 1 | 14.3 | 3 | 42.9 |
| 012 | 1 | 14.3 | 4 | 57.1 |
| 024 | 1 | 14.3 | 5 | 71.4 |
| 050 | 1 | 14.3 | 6 | 85.7 |
| 150 | 1 | 14.3 | 7 | 100.0 |

Frequency Missing = 60

51. Why did you install compact fluorescent lamps? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | C508-509 |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | C510-511 |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | C512-513 |
| d. Your previous experience with the energy efficiency of new equipment | 11 | 12 | 77 | 88 | C514-515 |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | C516-517 |
| **f. New installation/new building/expansion** | **11** | **12** | **Not applicable** | | C716-717 |

| Q51A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 28.6 | 2 | 28.6 |
| 12 | 5 | 71.4 | 7 | 100.0 |

Frequency Missing = 60

| Q51B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 57.1 | 4 | 57.1 |
| 12 | 3 | 42.9 | 7 | 100.0 |

Frequency Missing = 60

| Q51C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 14.3 | 1 | 14.3 |
| 12 | 5 | 71.4 | 6 | 85.7 |
| 77 | 1 | 14.3 | 7 | 100.0 |

Frequency Missing = 60

| Q51D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 42.9 | 3 | 42.9 |
| 12 | 3 | 42.9 | 6 | 85.7 |
| 77 | 1 | 14.3 | 7 | 100.0 |

Frequency Missing = 60

| Q51E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 14.3 | 1 | 14.3 |
| 12 | 6 | 85.7 | 7 | 100.0 |

Frequency Missing = 60

Other responses
Economy

| Q51F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 28.6 | 2 | 28.6 |
| 12 | 5 | 71.4 | 7 | 100.0 |

Frequency Missing = 60

52. Why didn't you apply for a rebate? (READ LIST).....**C518-519**

The rebate was too small.....11
It was too much of a hassle.....12
It was too late to apply.....13
You did not think about it.....14
You did not know about it.....15
Other (SPECIFY) _____.....16
Don't Know (DO NOT READ).....77
Refused (DO NOT READ).....88

| Q52 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 14.3 | 1 | 14.3 |
| 12 | 2 | 28.6 | 3 | 42.9 |
| 15 | 1 | 14.3 | 4 | 57.1 |
| 16 | 2 | 28.6 | 6 | 85.7 |
| 19 | 1 | 14.3 | 7 | 100.0 |

Frequency Missing = 60

Other responses
They would come one or two at a time
Don't think I quality for polycarbonate

53. Would you have installed the non-rebated compact fluorescent lamps if you had not received a rebate in 1996?.....**C520-521**

Yes.....11
No.....12
Don't Know.....77
Refused.....88

| Q53 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 57.1 | 4 | 57.1 |
| 12 | 3 | 42.9 | 7 | 100.0 |

Frequency Missing = 60

54. How did you <u>first</u> learn about compact fluorescent lamps? (READ LIST) **C522-523**

You were contacted by someone at PG&E.....11
You were contacted by a contractor or vendor.....12
Through media contact such as
a bill insert, TV, radio, or brochure.....13
From word of mouth.....14
From previously participating in a program.....15
Other (DO NOT READ).....16
Don't Know (DO NOT READ).....77
Refused (DO NOT READ).....88

| Q54 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 3 | 42.9 | 3 | 42.9 |
| 13 | 1 | 14.3 | 4 | 57.1 |
| 16 | 1 | 14.3 | 5 | 71.4 |
| 77 | 2 | 28.6 | 7 | 100.0 |

Frequency Missing = 60

**ASK EVERYONE**:

55. After getting a rebate in 1996, have you delamped any fluorescent fixtures without applying for a rebate? **C524-525**

Yes..... 11 (ASK Q56)
No..... 12 (GO TO Q63)
Don't Know..... 77 (GO TO Q63)
Refused..... 88 (GO TO Q63)

| Q55 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 3.0 | 2 | 3.0 |
| 12 | 62 | 92.5 | 64 | 95.5 |
| 77 | 3 | 4.5 | 67 | 100.0 |

**IF YES, ASK:**

56. How many fluorescent fixtures did you delamp without a rebate? **C526-528** (SPECIFY #)

| Q56 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 020 | 1 | 50.0 | 1 | 50.0 |
| 025 | 1 | 50.0 | 2 | 100.0 |

Frequency Missing = 65

57. On average, how many lamps did you take out per fixture? **C529-531** (SPECIFY #)

| Q57 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 002 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 65

58. On average, how many lamps were left in the fixture? **C532-534** (SPECIFY #)

| Q58 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 000 | 1 | 50.0 | 1 | 50.0 |
| 002 | 1 | 50.0 | 2 | 100.0 |

Frequency Missing = 65

59. Why did you delamp these fluorescent fixtures? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. Of your previous experience with the energy efficiency of delamping | 11 | 12 | 77 | 88 | **C535-536** |
| b. You did not need the extra light | 11 | 12 | 77 | 88 | **C537-538** |
| c. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | **C539-540** |

| Q59A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 50.0 | 1 | 50.0 |
| 12 | 1 | 50.0 | 2 | 100.0 |

Frequency Missing = 65

| Q59B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 65

| Q59C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 65

Other Response
Upgrading
To reduce ballast failure

60. Why didn't you apply for a rebate? (READ LIST).....**C541-542**

The rebate was too small.....11
It was too much of a hassle .....12
It was too late to apply.....13
You did not think about it .....14
You did not know about it.....15
Other (SPECIFY) _____.....16
Don't Know (DO NOT READ) .....77
Refused (DO NOT READ).....88
**The rebate was too small AND it was too much of a hassle .....19**

| Q60 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 1 | 50.0 | 1 | 50.0 |
| 19 | 1 | 50.0 | 2 | 100.0 |

Frequency Missing = 65

61. Would you have delamped these non-rebated fluorescent fixtures if you had not received a rebate in 1996? **C543-544**

Yes....11
No....12
Don't Know....77
Refused....88

| Q61 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 65

62. How did you <u>first</u> learn about delamping fluorescent fixtures? (READ LIST) **C545-546**

You were contacted by someone at PG&E....11
You were contacted by a contractor or vendor....12
Through media contact such as
a bill insert, TV, radio, or brochure....13
From word of mouth....14
From previously participating in a program....15
Other (DO NOT READ)....16
Don't Know (DO NOT READ)....77
Refused (DO NOT READ)....88

| Q62 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 65

**ASK EVERYONE**:

63. After getting a rebate in 1996, have you installed any T-8 lamp and electronic ballast fixtures without applying for a rebate? **C547-548**

Yes....11 (ASK Q64)
No....12 (GO TO Q70)
Don't Know....77 (GO TO Q70)
Refused....88 (GO TO Q70)

| Q63 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 11 | 16.4 | 11 | 16.4 |
| 12 | 54 | 80.6 | 65 | 97.0 |
| 77 | 2 | 3.0 | 67 | 100.0 |

**IF YES, ASK:**

64. How many of these fixtures did you install without a rebate? **C549-551** (SPECIFY #)

| Q64 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 1 | 9.1 | 1 | 9.1 |
| 003 | 1 | 9.1 | 2 | 18.2 |
| 004 | 1 | 9.1 | 3 | 27.3 |
| 006 | 2 | 18.2 | 5 | 45.5 |
| 007 | 1 | 9.1 | 6 | 54.5 |
| 010 | 1 | 9.1 | 7 | 63.6 |
| 012 | 1 | 9.1 | 8 | 72.7 |
| 030 | 1 | 9.1 | 9 | 81.8 |
| 060 | 1 | 9.1 | 10 | 90.9 |
| 160 | 1 | 9.1 | 11 | 100.0 |

Frequency Missing = 56

65. Of these, how many replaced old fixtures? **C552-554** (SPECIFY #)

| Q65 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 2 | 20.0 | 2 | 20.0 |
| 3 | 1 | 10.0 | 3 | 30.0 |
| 4 | 1 | 10.0 | 4 | 40.0 |
| 6 | 1 | 10.0 | 5 | 50.0 |
| 7 | 1 | 10.0 | 6 | 60.0 |
| 10 | 1 | 10.0 | 7 | 70.0 |
| 12 | 1 | 10.0 | 8 | 80.0 |
| 30 | 1 | 10.0 | 9 | 90.0 |
| 60 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 57

66. Why did you install the fixtures? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | C555-556 |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | C557-558 |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | C559-560 |
| d. Your previous experience with the energy efficiency of new equipment | 11 | 12 | 77 | 88 | C561-562 |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | C563-564 |
| **f. New installation/new building/expansion** | **11** | **12** | **Not applicable** | | C718-719 |

| Q66A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 45.5 | 5 | 45.5 |
| 12 | 6 | 54.5 | 11 | 100.0 |

Frequency Missing = 56

| Q66B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 45.5 | 5 | 45.5 |
| 12 | 5 | 45.5 | 10 | 90.9 |
| 77 | 1 | 9.1 | 11 | 100.0 |

Frequency Missing = 56

| Q66C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 45.5 | 5 | 45.5 |
| 12 | 5 | 45.5 | 10 | 90.9 |
| 77 | 1 | 9.1 | 11 | 100.0 |

Frequency Missing = 56

| Q66D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 36.4 | 4 | 36.4 |
| 12 | 5 | 45.5 | 9 | 81.8 |
| 77 | 2 | 18.2 | 11 | 100.0 |

Frequency Missing = 56

| Q66E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 27.3 | 3 | 27.3 |
| 12 | 8 | 72.7 | 11 | 100.0 |

Frequency Missing = 56

Other Response
Old
Discussion with PG&E Representative
More light

| Q66F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 18.2 | 2 | 18.2 |
| 12 | 9 | 81.8 | 11 | 100.0 |

Frequency Missing = 56

67. Why didn't you apply for a rebate? (READ LIST).....**C565-566**

The rebate was too small.....11
It was too much of a hassle .....12
It was too late to apply.....13
You did not think about it .....14
You did not know about it.....15
Other (SPECIFY) _____.....16
Don't Know (DO NOT READ) .....77
Refused (DO NOT READ).....88
**The rebate was too small AND it was too much of a hassle ……19**

| Q67 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 9.1 | 1 | 9.1 |
| 12 | 2 | 18.2 | 3 | 27.3 |
| 14 | 3 | 27.3 | 6 | 54.5 |
| 15 | 3 | 27.3 | 9 | 81.8 |
| 19 | 1 | 9.1 | 10 | 90.9 |
| 77 | 1 | 9.1 | 11 | 100.0 |

Frequency Missing = 56

68. Would you have installed these non-rebated fixtures if you had not received a rebate in 1996?.....**C567-568**

Yes.....11
No .....12
Don't Know.....77
Refused .....88

| Q68 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 10 | 90.9 | 10 | 90.9 |
| 77 | 1 | 9.1 | 11 | 100.0 |

Frequency Missing = 56

69. How did you first learn about T-8 fixtures? (READ LIST) ..... **C569-570**

You were contacted by someone at PG&E.....11
You were contacted by a contractor or vendor.....12
Through media contact such as
a bill insert, TV, radio, or brochure.....13
From word of mouth.....14
From previously participating in a program.....15
Other (DO NOT READ).....16
Don't Know (DO NOT READ).....77
Refused (DO NOT READ).....88

| Q69 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 18.2 | 2 | 18.2 |
| 12 | 4 | 36.4 | 6 | 54.5 |
| 13 | 1 | 9.1 | 7 | 63.6 |
| 14 | 1 | 9.1 | 8 | 72.7 |
| 16 | 1 | 9.1 | 9 | 81.8 |
| 77 | 2 | 18.2 | 11 | 100.0 |

Frequency Missing = 56

**ASK EVERYONE**:

70. After getting a rebate in 1996, have you installed any High Intensity Discharge, or HID, fixtures without applying for a rebate? **C571-572**

Yes..... 11 (ASK Q71)
No..... 12 (GO TO Q77)
Don't Know..... 77 (GO TO Q77)
Refused..... 88 (GO TO Q77)

| Q70 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 6 | 9.0 | 6 | 9.0 |
| 12 | 59 | 88.1 | 65 | 97.0 |
| 77 | 2 | 3.0 | 67 | 100.0 |

**IF YES, ASK:**

71. How many HID fixtures did you install without a rebate? **C573-575** (SPECIFY #)

| Q71 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 2 | 1 | 16.7 | 1 | 16.7 |
| 4 | 1 | 16.7 | 2 | 33.3 |
| 9 | 1 | 16.7 | 3 | 50.0 |
| 13 | 1 | 16.7 | 4 | 66.7 |
| 20 | 1 | 16.7 | 5 | 83.3 |
| 25 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 61

72. Of these, how many replaced old fixtures? **C576-578** (SPECIFY #)

| Q72 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 002 | 1 | 16.7 | 1 | 16.7 |
| 004 | 1 | 16.7 | 2 | 33.3 |
| 008 | 2 | 33.3 | 4 | 66.7 |
| 009 | 1 | 16.7 | 5 | 83.3 |
| 020 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 61

73. Why did you install HID fixtures? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | **C608-609** |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | **C610-611** |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | **C612-613** |
| d. Your previous experience with the energy efficiency of new equipment | 11 | 12 | 77 | 88 | **C614-615** |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | **C616-617** |

| Q73A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 50.0 | 3 | 50.0 |
| 12 | 2 | 33.3 | 5 | 83.3 |
| 77 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 61

| Q73B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 50.0 | 3 | 50.0 |
| 12 | 3 | 50.0 | 6 | 100.0 |

Frequency Missing = 61

| Q73C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 5 | 83.3 | 5 | 83.3 |
| 77 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 61

| Q73D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 66.7 | 4 | 66.7 |
| 12 | 1 | 16.7 | 5 | 83.3 |
| 77 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 61

| Q73E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 33.3 | 2 | 33.3 |
| 12 | 3 | 50.0 | 5 | 83.3 |
| 77 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 61

Other responses
Electrician recommended
Need HID for special use

74. Why didn't you apply for a rebate? (READ LIST).....**C618-619**

The rebate was too small.....11
It was too much of a hassle.....12
It was too late to apply.....13
You did not think about it.....14
You did not know about it.....15
Other (SPECIFY) _____.....16
Don't Know (DO NOT READ).....77
Refused (DO NOT READ).....88

| Q74 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 16.7 | 1 | 16.7 |
| 12 | 1 | 16.7 | 2 | 33.3 |
| 14 | 1 | 16.7 | 3 | 50.0 |
| 15 | 2 | 33.3 | 5 | 83.3 |
| 77 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 61

75. Would you have installed these non-rebated HID fixtures if you had not received a rebate in 1996?.....**C620-621**

Yes.....11
No.....12
Don't Know.....77
Refused.....88

| Q75 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 66.7 | 4 | 66.7 |
| 12 | 1 | 16.7 | 5 | 83.3 |
| 77 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 61

76. How did you first learn about HID fixtures? (READ LIST) ..... **C622-623**

You were contacted by someone at PG&E ..... 11
You were contacted by a contractor or vendor ..... 12
Through media contact such as
a bill insert, TV, radio, or brochure ..... 13
From word of mouth ..... 14
From previously participating in a program ..... 15
Other (DO NOT READ) ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q76 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 16.7 | 1 | 16.7 |
| 12 | 3 | 50.0 | 4 | 66.7 |
| 13 | 1 | 16.7 | 5 | 83.3 |
| 77 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 61

**ASK EVERYONE**:

77. After getting a rebate in 1996, have you installed any energy-efficient motors without applying for a rebate? **C624-625**

Yes ..... 11 (ASK Q78)
No ..... 12 (GO TO Q83)
Don't Know ..... 77 (GO TO Q83)
Refused ..... 88 (GO TO Q83)

| Q77 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 7 | 10.4 | 7 | 10.4 |
| 12 | 58 | 86.6 | 65 | 97.0 |
| 77 | 2 | 3.0 | 67 | 100.0 |

**IF YES, ASK:**

78. How many energy-efficient motors and of what horsepower did you install without a rebate? (FOR EXAMPLE: "__5__ MOTORS AT __25__ HORSEPOWER")

a. (SPECIFY #) **C626-628** motors at **C629-631** (SPECIFY HORSEPOWER)
b. (SPECIFY #) **C632-634** motors at **C635-637** (SPECIFY HORSEPOWER)
c. (SPECIFY #) **C638-640** motors at **C641-643** (SPECIFY HORSEPOWER)
d. (SPECIFY #) **C644-646** motors at **C647-649** (SPECIFY HORSEPOWER)

| Q78A1 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 2 | 28.6 | 2 | 28.6 |
| 2 | 2 | 28.6 | 4 | 57.1 |
| 3 | 2 | 28.6 | 6 | 85.7 |
| 40 | 1 | 14.3 | 7 | 100.0 |

Frequency Missing = 60

| Q78A2 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 001 | 3 | 42.9 | 3 | 42.9 |
| 005 | 1 | 14.3 | 4 | 57.1 |
| 020 | 1 | 14.3 | 5 | 71.4 |
| 050 | 1 | 14.3 | 6 | 85.7 |
| 075 | 1 | 14.3 | 7 | 100.0 |

Frequency Missing = 60

| Q78B1 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 3 | 1 | 100.0 | 1 | 100.0 |

Frequency Missing = 66

| Q78B2 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 1 | 100.0 | 1 | 100.0 |

Frequency Missing = 66

| Q78C1 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|

Frequency Missing = 67

| Q78C2 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|

Frequency Missing = 67

| Q78D1 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|

Frequency Missing = 67

| Q78D2 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|

Frequency Missing = 67

79. Of these, how many replaced old motors? **C650-653** (SPECIFY #)

| Q79 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0000 | 1 | 14.3 | 1 | 14.3 |
| 0001 | 2 | 28.6 | 3 | 42.9 |
| 0002 | 1 | 14.3 | 4 | 57.1 |
| 0003 | 1 | 14.3 | 5 | 71.4 |
| 0006 | 1 | 14.3 | 6 | 85.7 |
| 0040 | 1 | 14.3 | 7 | 100.0 |

Frequency Missing = 60

80. Why did you install these energy-efficient motors? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | **C654-655** |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | **C656-657** |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | **C658-659** |
| d. Your previous experience with the energy efficiency of new equipment | 11 | 12 | 77 | 88 | **C660-661** |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | **C662-663** |
| **f. New installation/new building/expansion** | **11** | **12** | **Not applicable** | | **C720-721** |

| Q80A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 57.1 | 4 | 57.1 |
| 12 | 3 | 42.9 | 7 | 100.0 |

Frequency Missing = 60

| Q80B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 28.6 | 2 | 28.6 |
| 12 | 5 | 71.4 | 7 | 100.0 |

Frequency Missing = 60

| Q80C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 28.6 | 2 | 28.6 |
| 12 | 5 | 71.4 | 7 | 100.0 |

Frequency Missing = 60

| Q80D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 28.6 | 2 | 28.6 |
| 12 | 5 | 71.4 | 7 | 100.0 |

Frequency Missing = 60

| Q80E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 14.3 | 1 | 14.3 |
| 12 | 6 | 85.7 | 7 | 100.0 |

Frequency Missing = 60

Other Response
Drive switched to variable frequency

| Q80F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 14.3 | 1 | 14.3 |
| 12 | 6 | 85.7 | 7 | 100.0 |

Frequency Missing = 60

81. Why didn't you apply for a rebate? (READ LIST).....**C664-665**

The rebate was too small.....11
It was too much of a hassle .....12
It was too late to apply.....13
You did not think about it .....14
You did not know about it.....15
Other (SPECIFY) _____.....16
Don't Know (DO NOT READ) .....77
Refused (DO NOT READ).....88
**The rebate was too small AND it was too much of a hassle ……19**

| Q81 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 14.3 | 1 | 14.3 |
| 14 | 3 | 42.9 | 4 | 57.1 |
| 15 | 1 | 14.3 | 5 | 71.4 |
| 16 | 1 | 14.3 | 6 | 85.7 |
| 19 | 1 | 14.3 | 7 | 100.0 |

Frequency Missing = 60

Other response

Not in the PG&E service area

82. Would you have installed these non-rebated energy-efficient motors if you had not received a rebate in 1996? .....**C666-667**

Yes.....11
No .....12
Don't Know.....77
Refused .....88

**(CONTINUE WITH Q83)**

| Q82 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 6 | 85.7 | 6 | 85.7 |
| 77 | 1 | 14.3 | 7 | 100.0 |

Frequency Missing = 60

83. How did you first learn about energy-efficient motors? (READ LIST)**C668-669**

You were contacted by someone at PG&E.....11
You were contacted by a contractor or vendor.....12
Through media contact such as
a bill insert, TV, radio, or brochure.....13
From word of mouth.....14
From previously participating in a program.....15
Other (DO NOT READ).....16
Don't Know (DO NOT READ).....77
Refused (DO NOT READ).....88

| Q83 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 14.3 | 1 | 14.3 |
| 12 | 4 | 57.1 | 5 | 71.4 |
| 77 | 2 | 28.6 | 7 | 100.0 |

Frequency Missing = 60

84. Those are all the questions I have. On behalf of PG&E, I greatly appreciate your time and cooperation in this survey. Thank you very much.

**NOTE: IF RESPONDENT REQUESTED CONTACT INFORMATION FOR PG&E, CHECK BOX AT BOTTOM OF CONTACT RECORD SHEET.**

**NOTE: IF RESPONDENT WANTED COMMENTS FORWARDED TO PG&E, ENTER THEM HERE:** _____

_____

**RESPONDENT NAME:** _____

**SAMPLE ID NUMBER:** C124-129 AND C670-675

**INTERVIEWER ID:** _____

**TIME ENDED:** C676-680

**DATE:** C130-135

Reasons for Refusing the Survey

| | Total | EEI Participant | |
|---|---|---|---|
| | | Lighting | Pumping |
| No ans. on last attempt/Ans. Mach. | 8 | 4 | 4 |
| Busy | 0 | 0 | 0 |
| Respondent not avail. on last attempt | 13 | 7 | 6 |
| Unable to reach respondent to finish interview | 0 | 0 | 0 |
| Disconnected/fax (no listing with direct. asst.) | 3 | 0 | 3 |
| Wrong number (no listing with direct. asst.) | 2 | 1 | 1 |
| Refusal (before contact determined) | 1 | 0 | 1 |
| Refusal (by correct contact) | 5 | 2 | 3 |
| Only partial interview | 1 | 0 | 1 |
| Other | 6 | 3 | 3 |
| Completes | 67 | 34 | 33 |
| Total | 106 | 51 | 55 |

# Appendix C - Final EEI Nonparticipant Telephone Survey with Response Frequencies

START OF SURVEY
TIME STARTED: **C208-211**

**Sample Type:**
**Pumping: 3**
**Lighting: 4**

| SMPLTYPE | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 3 | 42 | 55.3 | 42 | 55.3 |
| 4 | 34 | 44.7 | 76 | 100.0 |

1. First, I would like to ask you some general questions about your business or organization. How would you classify your business or organization? (READ LIST) (ENTER ALL THAT APPLY)

a. General farm ..... 11 **C212**
b. Ranch ..... 12 **C213**
c. Ornamental nursery ..... 13 **C214**
d. Indoor crops ..... 14 **C215**
e. Packing plant ..... 15 **C216**
f. Winery ..... 16 **C217**
g. Dairy farm ..... 17 **C218**
h. Water district ..... 18 **C219**
i. Other _____ ..... 19 **C220**
Specify
j. Don't Know (DO NOT READ) ..... 77
k. Refused (DO NOT READ) ..... 88
**l. Cold Storage ..... 20** **C223**

| Q1A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 42 | 55.3 | 42 | 55.3 |
| 1 | 34 | 44.7 | 76 | 100.0 |

| Q1B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 51 | 67.1 | 51 | 67.1 |
| 1 | 25 | 32.9 | 76 | 100.0 |

| Q1C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 70 | 92.1 | 70 | 92.1 |
| 1 | 6 | 7.9 | 76 | 100.0 |

| Q1D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 75 | 98.7 | 75 | 98.7 |
| 1 | 1 | 1.3 | 76 | 100.0 |

| Q1E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 70 | 92.1 | 70 | 92.1 |
| 1 | 6 | 7.9 | 76 | 100.0 |

| Q1F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 76 | 100.0 | 76 | 100.0 |

| Q1G | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 65 | 85.5 | 65 | 85.5 |
| 1 | 11 | 14.5 | 76 | 100.0 |

| Q1H | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 76 | 100.0 | 76 | 100.0 |

| Q1I | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 70 | 92.1 | 70 | 92.1 |
| 1 | 6 | 7.9 | 76 | 100.0 |

Other response
Government Agency
Shopping Center
Fertilizer Company
School
Commercial rice dryers
Green houses

| Q1J | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 76 | 100.0 | 76 | 100.0 |

| Q1K | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 76 | 100.0 | 76 | 100.0 |

| Q1L | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 75 | 98.7 | 75 | 98.7 |
| 1 | 1 | 1.3 | 76 | 100.0 |

2. Compared to other businesses or organizations similar to yours, would you categorize your business or organization as small, medium or large? **C226-227**

Small ..... 11
Medium ..... 12
Large ..... 13
Don't Know ..... 77
Refused ..... 88

| Q2 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 26 | 34.2 | 26 | 34.2 |
| 12 | 29 | 38.2 | 55 | 72.4 |
| 13 | 21 | 27.6 | 76 | 100.0 |

3. How long has your company or organization been operating at this location? **C228-229**

1 to 3 years ..... 11
4 to 10 years ..... 12
More than 10 years ..... 13
Don't Know ..... 77
Refused ..... 88

| Q3 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 6 | 7.9 | 6 | 7.9 |
| 12 | 8 | 10.5 | 14 | 18.4 |
| 13 | 62 | 81.6 | 76 | 100.0 |

4. Would you consider your business or organization operated by a family or a company? **C230-231**

Family ..... 11
Company ..... 12
Not applicable ..... 13
Don't Know ..... 77
Refused ..... 88

| Q4 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 56 | 73.7 | 56 | 73.7 |
| 12 | 17 | 22.4 | 73 | 96.1 |
| 13 | 3 | 3.9 | 76 | 100.0 |

**IF PUMP SAMPLE (CXXX=1) ASK:**

5. How many pumps do you have under your control? **C232-234** (SPECIFY #)

| Q5 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 1 | 2.4 | 1 | 2.4 |
| 1 | 5 | 11.9 | 6 | 14.3 |
| 2 | 3 | 7.1 | 9 | 21.4 |
| 3 | 1 | 2.4 | 10 | 23.8 |
| 4 | 5 | 11.9 | 15 | 35.7 |
| 5 | 6 | 14.3 | 21 | 50.0 |
| 6 | 1 | 2.4 | 22 | 52.4 |
| 8 | 4 | 9.5 | 26 | 61.9 |
| 10 | 2 | 4.8 | 28 | 66.7 |
| 11 | 1 | 2.4 | 29 | 69.0 |
| 12 | 3 | 7.1 | 32 | 76.2 |
| 15 | 2 | 4.8 | 34 | 81.0 |
| 20 | 3 | 7.1 | 37 | 88.1 |
| 21 | 1 | 2.4 | 38 | 90.5 |
| 25 | 1 | 2.4 | 39 | 92.9 |
| 30 | 1 | 2.4 | 40 | 95.2 |
| 45 | 1 | 2.4 | 41 | 97.6 |
| 46 | 1 | 2.4 | 42 | 100.0 |

Frequency Missing = 34

6. On average, how many months per year are the pumps in use? (READ LIST) **C235-236**

Less than 3 months per year ..... 11
3-6 months per year ..... 12
7-9 months per year ..... 13
Year round ..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q6 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 18 | 43.9 | 18 | 43.9 |
| 13 | 13 | 31.7 | 31 | 75.6 |
| 14 | 8 | 19.5 | 39 | 95.1 |
| 77 | 2 | 4.9 | 41 | 100.0 |

Frequency Missing = 35

7. If you grow crops, do you grow annual or permanent crops? **C237-238**

Annual ..... 11
Permanent ..... 12
Both annual and permanent ..... 13
Don't grow crops ..... 14

Don't Know..... 77
Refused..... 88

**(GO TO Q11)**

| Q7 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 14 | 33.3 | 14 | 33.3 |
| 12 | 15 | 35.7 | 29 | 69.0 |
| 13 | 7 | 16.7 | 36 | 85.7 |
| 14 | 6 | 14.3 | 42 | 100.0 |

Frequency Missing = 34

**IF LIGHTING SAMPLE (CXXX=0), ASK:**

Next I'd like to ask you a few questions about your site. If a residence is included in the accounts for this site, please exclude the residence when you answer the following questions.

8. In what year was your facility built? __C239-242__ (SPECIFY YEAR)

| Q8 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 000& | 3 | 8.8 | 3 | 8.8 |
| 1919 | 1 | 2.9 | 4 | 11.8 |
| 1920 | 1 | 2.9 | 5 | 14.7 |
| 1921 | 1 | 2.9 | 6 | 17.6 |
| 1941 | 1 | 2.9 | 7 | 20.6 |
| 1948 | 1 | 2.9 | 8 | 23.5 |
| 1949 | 1 | 2.9 | 9 | 26.5 |
| 1950 | 1 | 2.9 | 10 | 29.4 |
| 1953 | 1 | 2.9 | 11 | 32.4 |
| 1964 | 2 | 5.9 | 13 | 38.2 |
| 1965 | 1 | 2.9 | 14 | 41.2 |
| 1968 | 1 | 2.9 | 15 | 44.1 |
| 1970 | 1 | 2.9 | 16 | 47.1 |
| 1972 | 1 | 2.9 | 17 | 50.0 |
| 1976 | 3 | 8.8 | 20 | 58.8 |
| 1977 | 1 | 2.9 | 21 | 61.8 |
| 1980 | 2 | 5.9 | 23 | 67.6 |
| 1983 | 1 | 2.9 | 24 | 70.6 |
| 1984 | 1 | 2.9 | 25 | 73.5 |
| 1987 | 2 | 5.9 | 27 | 79.4 |
| 1989 | 1 | 2.9 | 28 | 82.4 |
| 1990 | 2 | 5.9 | 30 | 88.2 |
| 1992 | 1 | 2.9 | 31 | 91.2 |
| 1993 | 1 | 2.9 | 32 | 94.1 |
| 1995 | 2 | 5.9 | 34 | 100.0 |

Frequency Missing = 42

9. Was the total area of the facility altered in 1995 or 1996? **C243-244**

Yes ..... 11
No ..... 12
Don't Know ..... 77
Refused ..... 88

| Q9 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 8 | 23.5 | 8 | 23.5 |
| 12 | 25 | 73.5 | 33 | 97.1 |
| 77 | 1 | 2.9 | 34 | 100.0 |

Frequency Missing = 42

10. Approximately, what percent of the time are the lights at your facility on, annually?

**C245-247** (SPECIFY %)

**(GO TO Q11)**

| Q10 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 5 | 14.7 | 5 | 14.7 |
| 000 | 3 | 8.8 | 8 | 23.5 |
| 005 | 1 | 2.9 | 9 | 26.5 |
| 010 | 2 | 5.9 | 11 | 32.4 |
| 025 | 1 | 2.9 | 12 | 35.3 |
| 030 | 1 | 2.9 | 13 | 38.2 |
| 038 | 1 | 2.9 | 14 | 41.2 |
| 040 | 3 | 8.8 | 17 | 50.0 |
| 045 | 3 | 8.8 | 20 | 58.8 |
| 050 | 4 | 11.8 | 24 | 70.6 |
| 055 | 2 | 5.9 | 26 | 76.5 |
| 060 | 3 | 8.8 | 29 | 85.3 |
| 070 | 1 | 2.9 | 30 | 88.2 |
| 075 | 2 | 5.9 | 32 | 94.1 |
| 080 | 1 | 2.9 | 33 | 97.1 |
| 100 | 1 | 2.9 | 34 | 100.0 |

Frequency Missing = 42

**ASK EVERYONE:**

11. Typically, who decides to install energy-efficient improvements? (READ LIST) (ENTER ALL THAT APPLY)

a. The owner(s) ..... 11 **C248**
b. A partner or partners ..... 12 **C249**
c. The farm manager ..... 13 **C250**

d. An Ag Engineer or a consultant..... 14 **C251**
e. It's a group decision process..... 15 **C252**
f. Other (DO NOT READ)_____ ..... 16 **C253**
(Specify)
g. Don't Know (DO NOT READ)..... 77
h. Refused (DO NOT READ)..... 88
**i. Site/plant/operations manager ..... 17** **C257**

| Q11A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 27 | 35.5 | 27 | 35.5 |
| 1 | 49 | 64.5 | 76 | 100.0 |

| Q11B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 71 | 93.4 | 71 | 93.4 |
| 1 | 5 | 6.6 | 76 | 100.0 |

| Q11C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 69 | 90.8 | 69 | 90.8 |
| 1 | 7 | 9.2 | 76 | 100.0 |

| Q11D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 76 | 100.0 | 76 | 100.0 |

| Q11E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 61 | 80.3 | 61 | 80.3 |
| 1 | 15 | 19.7 | 76 | 100.0 |

| Q11F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 76 | 100.0 | 76 | 100.0 |

| Q11G | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 76 | 100.0 | 76 | 100.0 |

| Q11H | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 76 | 100.0 | 76 | 100.0 |

| Q11I | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 74 | 97.4 | 74 | 97.4 |
| 1 | 2 | 2.6 | 76 | 100.0 |

12. Which of these financial methods do you typically use to evaluate energy-efficiency improvements? (READ LIST) **C259-260**

Simple payback ..... 11
Lowest First Cost..... 12
A more complex financial analysis..... 13
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q12 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 43 | 56.6 | 43 | 56.6 |
| 12 | 12 | 15.8 | 55 | 72.4 |
| 13 | 8 | 10.5 | 63 | 82.9 |
| 14 | 2 | 2.6 | 65 | 85.5 |
| 77 | 11 | 14.5 | 76 | 100.0 |

13. How would you rate the importance of improving the efficiency of the equipment at your site? (READ LIST) **C261-262**

Very important ..... 11
Somewhat important..... 12
Not too important ..... 13
Not at all important..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q13 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 39 | 51.3 | 39 | 51.3 |
| 12 | 29 | 38.2 | 68 | 89.5 |
| 13 | 7 | 9.2 | 75 | 98.7 |
| 14 | 1 | 1.3 | 76 | 100.0 |

14. What are the primary sources of advice and information you use when planning to invest in energy-using equipment? (READ LIST AND ENTER ALL THAT APPLY).

a. A PG&E service representative ..... 11 **C263**
b. A PG&E brochure in the mail or a bill insert ..... 12 **C264**
c. A vendor or contractor ..... 13 **C265**
d. General media like television, radio, or the newspaper..... 14 **C266**
e. Word of mouth..... 15 **C267**
f. Don't Know (DO NOT READ)..... 77
g. Refused (DO NOT READ) ..... 88

| Q14A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 33 | 43.4 | 33 | 43.4 |
| 1 | 43 | 56.6 | 76 | 100.0 |

| Q14B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 61 | 80.3 | 61 | 80.3 |
| 1 | 15 | 19.7 | 76 | 100.0 |

| Q14C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 40 | 52.6 | 40 | 52.6 |
| 1 | 36 | 47.4 | 76 | 100.0 |

| Q14D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 67 | 88.2 | 67 | 88.2 |
| 1 | 9 | 11.8 | 76 | 100.0 |

| Q14E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 54 | 71.1 | 54 | 71.1 |
| 1 | 22 | 28.9 | 76 | 100.0 |

| Q14F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 72 | 94.7 | 72 | 94.7 |
| 1 | 4 | 5.3 | 76 | 100.0 |

| Q14G | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 76 | 100.0 | 76 | 100.0 |

**ASK EVERYONE:**

Please rate the importance of the following factors in any decision to install high-efficiency equipment.

15. How important would (ITEM) be in your decision to install high-efficiency equipment? Would that be: (READ LIST)?

| | | | | | (DO NOT READ) | | |
|---|---|---|---|---|---|---|---|
| | Very Important | Somewhat Important | Not too important | Not at all Important | Don't Know | Refused | |
| a. The availability of a rebate | 11 | 12 | 13 | 14 | 77 | 88 | C308-309 |
| b. The low performance of current equipment | 11 | 12 | 13 | 14 | 77 | 88 | C310-311 |
| c. A low purchase cost | 11 | 12 | 13 | 14 | 77 | 88 | C312-313 |
| d. An expected reduction of operating costs | 11 | 12 | 13 | 14 | 77 | 88 | C314-315 |
| e. A low maintenance cost | 11 | 12 | 13 | 14 | 77 | 88 | C316-317 |
| f. A lower energy bill | 11 | 12 | 13 | 14 | 77 | 88 | C318-319 |
| g. The questionable reliability of your current equipment | 11 | 12 | 13 | 14 | 77 | 88 | C320-321 |
| h. Having a lower environmental impact | 11 | 12 | 13 | 14 | 77 | 88 | C322-323 |
| i. Improving the resale value of the property | 11 | 12 | 13 | 14 | 77 | 88 | C324-325 |
| j. The general health of the economy | 11 | 12 | 13 | 14 | 77 | 88 | C326-327 |

| Q15A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 33 | 43.4 | 33 | 43.4 |
| 12 | 33 | 43.4 | 66 | 86.8 |
| 13 | 4 | 5.3 | 70 | 92.1 |
| 14 | 2 | 2.6 | 72 | 94.7 |
| 77 | 3 | 3.9 | 75 | 98.7 |
| 88 | 1 | 1.3 | 76 | 100.0 |

| Q15B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 42 | 55.3 | 42 | 55.3 |
| 12 | 27 | 35.5 | 69 | 90.8 |
| 13 | 5 | 6.6 | 74 | 97.4 |
| 77 | 1 | 1.3 | 75 | 98.7 |
| 88 | 1 | 1.3 | 76 | 100.0 |

| Q15C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 38 | 50.0 | 38 | 50.0 |
| 12 | 29 | 38.2 | 67 | 88.2 |
| 13 | 5 | 6.6 | 72 | 94.7 |
| 14 | 2 | 2.6 | 74 | 97.4 |
| 77 | 2 | 2.6 | 76 | 100.0 |

| Q15D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 59 | 77.6 | 59 | 77.6 |
| 12 | 17 | 22.4 | 76 | 100.0 |

| Q15E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 54 | 71.1 | 54 | 71.1 |
| 12 | 19 | 25.0 | 73 | 96.1 |
| 13 | 2 | 2.6 | 75 | 98.7 |
| 77 | 1 | 1.3 | 76 | 100.0 |

| Q15F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 69 | 90.8 | 69 | 90.8 |
| 12 | 5 | 6.6 | 74 | 97.4 |
| 77 | 2 | 2.6 | 76 | 100.0 |

| Q15G | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 35 | 46.1 | 35 | 46.1 |
| 12 | 36 | 47.4 | 71 | 93.4 |
| 13 | 3 | 3.9 | 74 | 97.4 |
| 14 | 1 | 1.3 | 75 | 98.7 |
| 77 | 1 | 1.3 | 76 | 100.0 |

| Q15H | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 17 | 22.4 | 17 | 22.4 |
| 12 | 39 | 51.3 | 56 | 73.7 |
| 13 | 11 | 14.5 | 67 | 88.2 |
| 14 | 5 | 6.6 | 72 | 94.7 |
| 77 | 3 | 3.9 | 75 | 98.7 |
| 88 | 1 | 1.3 | 76 | 100.0 |

| Q15I | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 19 | 25.0 | 19 | 25.0 |
| 12 | 28 | 36.8 | 47 | 61.8 |
| 13 | 12 | 15.8 | 59 | 77.6 |
| 14 | 14 | 18.4 | 73 | 96.1 |
| 77 | 3 | 3.9 | 76 | 100.0 |

| Q15J | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 16 | 21.1 | 16 | 21.1 |
| 12 | 28 | 36.8 | 44 | 57.9 |
| 13 | 21 | 27.6 | 65 | 85.5 |
| 14 | 10 | 13.2 | 75 | 98.7 |
| 77 | 1 | 1.3 | 76 | 100.0 |

**ASK EVERYONE:**

Now I want to ask you some questions about PG&E programs and your PG&E service representative.

16. How familiar are you with PG&E's energy-efficiency programs? Would you say you are: (READ LIST)? **C328-329**

Very familiar ..... 11
Somewhat familiar ..... 12
Not too familiar ..... 13
Not at all familiar ..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q16 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 6.6 | 5 | 6.6 |
| 12 | 29 | 38.2 | 34 | 44.7 |
| 13 | 30 | 39.5 | 64 | 84.2 |
| 14 | 12 | 15.8 | 76 | 100.0 |

17. How many total times have you participated in PG&E energy-efficiency programs? (READ LIST) **C330-331**

Once ..... 11
Twice ..... 12
Several times ..... 13
Never ..... 14
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q17 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 18 | 23.7 | 18 | 23.7 |
| 12 | 10 | 13.2 | 28 | 36.8 |
| 13 | 17 | 22.4 | 45 | 59.2 |
| 14 | 30 | 39.5 | 75 | 98.7 |
| 77 | 1 | 1.3 | 76 | 100.0 |

18. How many total times has the PG&E service representative contacted you? (READ LIST)

C332-333

Once ..... 11 (ASK Q19)
Twice ..... 12 (ASK Q19)
Several times ..... 13 (ASK Q19)
Never ..... 14 (GO TO Q20)
Don't Know (DO NOT READ) ..... 77 (GO TO Q20)
Refused (DO NOT READ) ..... 88 (GO TO Q20)

| Q18 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 17 | 22.4 | 17 | 22.4 |
| 12 | 8 | 10.5 | 25 | 32.9 |
| 13 | 18 | 23.7 | 43 | 56.6 |
| 14 | 30 | 39.5 | 73 | 96.1 |
| 77 | 3 | 3.9 | 76 | 100.0 |

**IF Q18 = CONTACTED AT LEAST ONCE, ASK:**

19. How helpful was your PG&E representative in: (ITEM). (READ LIST)

| | | | | | (DO NOT READ) | | |
|---|---|---|---|---|---|---|---|
| | Very Helpful | Somewhat Helpful | Not too Helpful | Not at all Helpful | Don't know | Refused | |
| a. Making you aware of any programs | 11 | 12 | 13 | 14 | 77 | 88 | C334-335 |
| b. Letting you know energy-efficient equipment options | 11 | 12 | 13 | 14 | 77 | 88 | C336-337 |

| Q19A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 19 | 44.2 | 19 | 44.2 |
| 12 | 15 | 34.9 | 34 | 79.1 |
| 13 | 7 | 16.3 | 41 | 95.3 |
| 14 | 1 | 2.3 | 42 | 97.7 |
| 77 | 1 | 2.3 | 43 | 100.0 |

Frequency Missing = 33

| Q19B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 8 | 18.6 | 8 | 18.6 |
| 12 | 23 | 53.5 | 31 | 72.1 |
| 13 | 6 | 14.0 | 37 | 86.0 |
| 14 | 4 | 9.3 | 41 | 95.3 |
| 77 | 2 | 4.7 | 43 | 100.0 |

Frequency Missing = 33

**ASK EVERYONE:**

The last set of questions I have for you are questions about energy-efficient equipment you may have installed in 1996.

20. Did you repair any deep well pumps in 1996?..... **C338-339**

Yes ..... 11 (ASK Q21)
No ..... 12 (GO TO Q24)
Don't Know ..... 77 (GO TO Q24)
Refused ..... 88 (GO TO Q24)

| Q20 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 23 | 30.3 | 23 | 30.3 |
| 12 | 53 | 69.7 | 76 | 100.0 |

**IF YES, ASK:**

21. How many deep well pumps did you repair? **C340-342** (SPECIFY #)

| Q21 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 16 | 69.6 | 16 | 69.6 |
| 2 | 3 | 13.0 | 19 | 82.6 |
| 5 | 3 | 13.0 | 22 | 95.7 |
| 6 | 1 | 4.3 | 23 | 100.0 |

Frequency Missing = 53

22. Why did you repair the pumps? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | C343-344 |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | C345-346 |
| c. You were worried about equipment reliability | 11 | 12 | 77 | 88 | C347-348 |
| d. Your previous experience with pump repairs | 11 | 12 | 77 | 88 | C349-350 |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | C351-352 |

| Q22A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 17 | 73.9 | 17 | 73.9 |
| 12 | 5 | 21.7 | 22 | 95.7 |
| 77 | 1 | 4.3 | 23 | 100.0 |

Frequency Missing = 53

| Q22B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 12 | 52.2 | 12 | 52.2 |
| 12 | 11 | 47.8 | 23 | 100.0 |

Frequency Missing = 53

| Q22C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 10 | 43.5 | 10 | 43.5 |
| 12 | 13 | 56.5 | 23 | 100.0 |

Frequency Missing = 53

| Q22D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 13.0 | 3 | 13.0 |
| 12 | 19 | 82.6 | 22 | 95.7 |
| 77 | 1 | 4.3 | 23 | 100.0 |

Frequency Missing = 53

| Q22E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 23 | 100.0 | 23 | 100.0 |

Frequency Missing = 53

23. According to PG&E records, you did not obtain a rebate for repairing deep well pumps. Why didn't you apply for a rebate? (READ LIST).....**C353-354**

The rebate was too small..... 11
It was too much of a hassle ..... 12
It was too late to apply..... 13
You did not think about it ..... 14
You did not know about it..... 15
Other (SPECIFY) _____..... 16
Don't Know (DO NOT READ)..... 77
Refused (DO NOT READ) ..... 88

**(GO TO Q24)**

**ASK EVERYONE:**

| Q23 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 1 | 4.3 | 1 | 4.3 |
| 14 | 3 | 13.0 | 4 | 17.4 |
| 15 | 16 | 69.6 | 20 | 87.0 |
| 16 | 3 | 13.0 | 23 | 100.0 |

Frequency Missing = 53

Responses specified in 'other'.
We were told no rebate program was available.
The vendor was supposed to apply.
Not eligible.

24. Did you install any low pressure sprinkler nozzles in 1996? **C355-356**

Yes ..... 11 (ASK Q25)
No ..... 12 (GO TO Q30)
Don't Know ..... 77 (GO TO Q30)
Refused ..... 88 (GO TO Q30)

| Q24 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 10 | 13.2 | 10 | 13.2 |
| 12 | 66 | 86.8 | 76 | 100.0 |

**IF YES, ASK:**

25. How many low pressure sprinkler nozzles did you install? **C357-359** (SPECIFY #)

| Q25 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 000& | 2 | 20.0 | 2 | 20.0 |
| 0015 | 1 | 10.0 | 3 | 30.0 |
| 0030 | 1 | 10.0 | 4 | 40.0 |
| 0100 | 1 | 10.0 | 5 | 50.0 |
| 0250 | 1 | 10.0 | 6 | 60.0 |
| 0500 | 1 | 10.0 | 7 | 70.0 |
| 0999 | 2 | 20.0 | 9 | 90.0 |
| 1000 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 66

26. Of these, how many replaced other sprinkler nozzles? **C360-362** (SPECIFY #)

| Q26 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 8 | 80.0 | 8 | 80.0 |
| 7 | 2 | 20.0 | 10 | 100.0 |

Frequency Missing = 66

27. Why did you install these low pressure sprinkler nozzles? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | **C363-364** |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | **C365-366** |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | **C367-368** |
| d. Your previous experience with the energy efficiency of low pressure nozzles | 11 | 12 | 77 | 88 | **C369-370** |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | |
| **f. New installation/new building/expansion** | **11** | **12** | **Not applicable** | **C160-161** | **C371-372** |

| Q27A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 20.0 | 2 | 20.0 |
| 12 | 6 | 60.0 | 8 | 80.0 |
| 77 | 2 | 20.0 | 10 | 100.0 |

Frequency Missing = 66

| Q27B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 20.0 | 2 | 20.0 |
| 12 | 7 | 70.0 | 9 | 90.0 |
| 77 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 66

| Q27C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 40.0 | 4 | 40.0 |
| 12 | 6 | 60.0 | 10 | 100.0 |

Frequency Missing = 66

| Q27D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 50.0 | 5 | 50.0 |
| 12 | 4 | 40.0 | 9 | 90.0 |
| 77 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 66

| Q27E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 20.0 | 2 | 20.0 |
| 12 | 7 | 70.0 | 9 | 90.0 |
| 77 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 66

Other responses
To improve landscaping. We had just been using hoses.
Old ones were taken out because they needed replacement

| Q27F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 30.0 | 3 | 30.0 |
| 12 | 7 | 70.0 | 10 | 100.0 |

Frequency Missing = 66

28. How did you <u>first</u> learn about low pressure sprinkler nozzles? (READ LIST) **C373-374**

You were contacted by someone at PG&E ..... 11
You were contacted by a contractor or vendor ..... 12
Through media contact such as
a bill insert, TV, radio, or brochure ..... 13
From word of mouth ..... 14
From previously participating in a program ..... 15
Other (DO NOT READ) ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q28 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 7 | 70.0 | 7 | 70.0 |
| 14 | 1 | 10.0 | 8 | 80.0 |
| 77 | 2 | 20.0 | 10 | 100.0 |

Frequency Missing = 66

29. According to PG&E records, you did not obtain a rebate for installing low pressure sprinkler nozzles. Why didn't you apply for a rebate? (READ LIST). **C375-376**

The rebate was too small ..... 11
It was too much of a hassle ..... 12
It was too late to apply ..... 13
You did not think about it ..... 14
You did not know about it ..... 15
Other (SPECIFY) _____ ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

**(GO TO Q30)**

| Q29 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 15 | 9 | 90.0 | 9 | 90.0 |
| 77 | 1 | 10.0 | 10 | 100.0 |

Frequency Missing = 66

**ASK EVERYONE:**

30. Did you convert any sprinkler systems to micro irrigation systems or install any new micro irrigation systems in 1996? **C408-409**

Yes ..... 11 (ASK Q31)
No ..... 12 (GO TO Q36)
Don't Know ..... 77 (GO TO Q36)
Refused ..... 88 (GO TO Q36)

| Q30 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 8 | 10.5 | 8 | 10.5 |
| 12 | 67 | 88.2 | 75 | 98.7 |
| 77 | 1 | 1.3 | 76 | 100.0 |

**IF YES, ASK:**

31. How many acres did you convert or install? **C410-412** (# OF ACRES)

| Q31 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 1 | 12.5 | 1 | 12.5 |
| 001 | 1 | 12.5 | 2 | 25.0 |
| 010 | 1 | 12.5 | 3 | 37.5 |
| 015 | 1 | 12.5 | 4 | 50.0 |
| 100 | 1 | 12.5 | 5 | 62.5 |
| 150 | 1 | 12.5 | 6 | 75.0 |
| 200 | 1 | 12.5 | 7 | 87.5 |
| 999 | 1 | 12.5 | 8 | 100.0 |

Frequency Missing = 68

32. Of these, how many acres replaced old sprinkler systems? **C413-415** (# OF ACRES)

| Q32 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 2 | 25.0 | 2 | 25.0 |
| 000 | 2 | 25.0 | 4 | 50.0 |
| 005 | 1 | 12.5 | 5 | 62.5 |
| 010 | 1 | 12.5 | 6 | 75.0 |
| 200 | 1 | 12.5 | 7 | 87.5 |
| 999 | 1 | 12.5 | 8 | 100.0 |

Frequency Missing = 68

33. Why did you install the micro irrigation system? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | **C416-417** |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | **C418-419** |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | **C420-421** |
| d. Your previous experience with the energy efficiency of new equipment | 11 | 12 | 77 | 88 | **C422-423** |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | **C424-425** |
| **f. New installation/new building/expansion** | **11** | **12** | **Not applicable** | | **C162-163** |

| Q33A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 8 | 100.0 | 8 | 100.0 |

Frequency Missing = 68

| Q33B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 8 | 100.0 | 8 | 100.0 |

Frequency Missing = 68

| Q33C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 25.0 | 2 | 25.0 |
| 12 | 6 | 75.0 | 8 | 100.0 |

Frequency Missing = 68

| Q33D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 25.0 | 2 | 25.0 |
| 12 | 6 | 75.0 | 8 | 100.0 |

Frequency Missing = 68

| Q33E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 62.5 | 5 | 62.5 |
| 12 | 3 | 37.5 | 8 | 100.0 |

Frequency Missing = 68

Other response
- Fits our program better. Saves on fertilizer and tests show it produced more and better
- Better for trees and cost
- More efficient water handling
- More water efficiency
- Waste less energy and water

| Q33F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 50.0 | 4 | 50.0 |
| 12 | 4 | 50.0 | 8 | 100.0 |

Frequency Missing = 68

34. How did you <u>first</u> learn about micro irrigation systems? (READ LIST) **C426-427**

You were contacted by someone at PG&E .....11
You were contacted by a contractor or vendor.....12
Through media contact such as
.....a bill insert, TV, radio, or brochure 13
From word of mouth .....14
From previously participating in a program.....15
Other (DO NOT READ) .....16
Don't Know (DO NOT READ).....77
Refused (DO NOT READ) 88

| Q34 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 1 | 12.5 | 1 | 12.5 |
| 14 | 2 | 25.0 | 3 | 37.5 |
| 16 | 2 | 25.0 | 5 | 62.5 |
| 77 | 3 | 37.5 | 8 | 100.0 |

Frequency Missing = 68

35. According to PG&E records, you did not obtain a rebate for installing or converting to micro irrigation systems. Why didn't you apply for a rebate? (READ LIST) **C428-429**

The rebate was too small.....11
It was too much of a hassle.....12
It was too late to apply .....13
You did not think about it .....14
You did not know about it.....15
Other (SPECIFY) _____....16
Don't Know (DO NOT READ).....77
Refused (DO NOT READ) .....88

**(GO TO Q36)**

| Q35 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 14 | 1 | 12.5 | 1 | 12.5 |
| 15 | 5 | 62.5 | 6 | 75.0 |
| 16 | 2 | 25.0 | 8 | 100.0 |

Frequency Missing = 68

**Responses specified in 'other'**

Not eligible, since it wasn't a replacement or an upgrade.
I thought I did.

**ASK EVERYONE:**

36. Did you install any compact fluorescent lamps in 1996? **C430-431**

Yes.....11 (ASK Q37)
No.....12 (GO TO Q42)
Don't Know.....77 (GO TO Q42)
Refused.....88 (GO TO Q42)

| Q36 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 9 | 11.8 | 9 | 11.8 |
| 12 | 67 | 88.2 | 76 | 100.0 |

**IF YES, ASK:**

37. How many compact fluorescent lamps did you install? **C432-434** (SPECIFY #)

| Q37 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 1 | 11.1 | 1 | 11.1 |
| 001 | 1 | 11.1 | 2 | 22.2 |
| 002 | 1 | 11.1 | 3 | 33.3 |
| 003 | 2 | 22.2 | 5 | 55.6 |
| 006 | 1 | 11.1 | 6 | 66.7 |
| 010 | 2 | 22.2 | 8 | 88.9 |
| 090 | 1 | 11.1 | 9 | 100.0 |

Frequency Missing = 67

38. Of these, how many replaced old lamps? **C435-437** (SPECIFY #)

| Q38 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 1 | 11.1 | 1 | 11.1 |
| 000 | 2 | 22.2 | 3 | 33.3 |
| 001 | 1 | 11.1 | 4 | 44.4 |
| 002 | 1 | 11.1 | 5 | 55.6 |
| 003 | 2 | 22.2 | 7 | 77.8 |
| 005 | 1 | 11.1 | 8 | 88.9 |
| 010 | 1 | 11.1 | 9 | 100.0 |

Frequency Missing = 67

39. Why did you install compact fluorescent lamps? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | C438-439 |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | C440-441 |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | C442-443 |
| d. Your previous experience with the energy efficiency of new equipment | 11 | 12 | 77 | 88 | C444-445 |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | C446-447 |

| Q39A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 33.3 | 3 | 33.3 |
| 12 | 5 | 55.6 | 8 | 88.9 |
| 77 | 1 | 11.1 | 9 | 100.0 |

Frequency Missing = 67

| Q39B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 22.2 | 2 | 22.2 |
| 12 | 7 | 77.8 | 9 | 100.0 |

Frequency Missing = 67

| Q39C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 55.6 | 5 | 55.6 |
| 12 | 3 | 33.3 | 8 | 88.9 |
| 77 | 1 | 11.1 | 9 | 100.0 |

Frequency Missing = 67

| Q39D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 5 | 55.6 | 5 | 55.6 |
| 12 | 3 | 33.3 | 8 | 88.9 |
| 77 | 1 | 11.1 | 9 | 100.0 |

Frequency Missing = 67

| Q39E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 22.2 | 2 | 22.2 |
| 12 | 7 | 77.8 | 9 | 100.0 |

Frequency Missing = 67

Other responses
Security
Accommodate expansion

40. How did you <u>first</u> learn about compact fluorescent lamps? (READ LIST) **C448-449**

You were contacted by someone at PG&E ..... 11
You were contacted by a contractor or vendor ..... 12
Through media contact such as
a bill insert, TV, radio, or brochure ..... 13
From word of mouth ..... 14
From previously participating in a program ..... 15
Other (DO NOT READ) ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q40 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 6 | 66.7 | 6 | 66.7 |
| 13 | 1 | 11.1 | 7 | 77.8 |
| 14 | 2 | 22.2 | 9 | 100.0 |

Frequency Missing = 67

41. According to PG&E records you did not apply for a rebate for installing compact fluorescent lamps. Why didn't you apply for a rebate? (READ LIST) **C450-451**

The rebate was too small ..... 11
It was too much of a hassle ..... 12
It was too late to apply ..... 13
You did not think about it ..... 14
You did not know about it ..... 15
Other (SPECIFY) _____ ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

**(GO TO Q42)**

| Q41 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 1 | 11.1 | 1 | 11.1 |
| 14 | 1 | 11.1 | 2 | 22.2 |
| 15 | 6 | 66.7 | 8 | 88.9 |
| 16 | 1 | 11.1 | 9 | 100.0 |

Frequency Missing = 67

Other responses
Handled by contractor

**ASK EVERYONE:**

42. Did you delamp any fluorescent fixtures in 1996? **C452-453**

Yes.....11 (ASK Q43)
No.....12 (GO TO Q49)
Don't Know.....77 (GO TO Q49)
Refused.....88 (GO TO Q49)

| Q42 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 3.9 | 3 | 3.9 |
| 12 | 73 | 96.1 | 76 | 100.0 |

**If YES, ASK:**

43. How many fluorescent fixtures did you delamp without a rebate? **C454-456** (SPECIFY #)

| Q43 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 1 | 33.3 | 1 | 33.3 |
| 004 | 2 | 66.7 | 3 | 100.0 |

Frequency Missing = 73

44. On average, how many lamps did you take out per fixture? **C457-459** (SPECIFY #)

| Q44 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 002 | 1 | 33.3 | 1 | 33.3 |
| 006 | 1 | 33.3 | 2 | 66.7 |
| 008 | 1 | 33.3 | 3 | 100.0 |

Frequency Missing = 73

45. On average, how many lamps were left in the fixture? **C460-462** (SPECIFY #)

| Q45 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 1 | 33.3 | 1 | 33.3 |
| 004 | 2 | 66.7 | 3 | 100.0 |

Frequency Missing = 73

46. Why did you delamp these fluorescent fixtures? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. Of your previous experience with the energy efficiency of delamping | 11 | 12 | 77 | 88 | **C463-464** |
| b. You did not need the extra light | 11 | 12 | 77 | 88 | **C465-466** |
| c. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | **C467-468** |

| Q46A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 1 | 33.3 | 1 | 33.3 |
| 77 | 2 | 66.7 | 3 | 100.0 |

Frequency Missing = 73

| Q46B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 33.3 | 1 | 33.3 |
| 77 | 2 | 66.7 | 3 | 100.0 |

Frequency Missing = 73

| Q46C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 66.7 | 2 | 66.7 |
| 12 | 1 | 33.3 | 3 | 100.0 |

Frequency Missing = 73

Other responses
Efficiency of the light
Changed lamp style

47. How did you <u>first</u> learn about delamping fluorescent fixtures? (READ LIST) **C469-470**

You were contacted by someone at PG&E ..... 11
You were contacted by a contractor or vendor ..... 12
Through media contact such as
a bill insert, TV, radio, or brochure ..... 13
From word of mouth ..... 14
From previously participating in a program ..... 15
Other (DO NOT READ) ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q47 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 14 | 1 | 33.3 | 1 | 33.3 |
| 15 | 1 | 33.3 | 2 | 66.7 |
| 77 | 1 | 33.3 | 3 | 100.0 |

Frequency Missing = 73

48. According to PG&E records you did not apply for a rebate for delamping fluorescent fixtures. Why didn't you apply for a rebate? (READ LIST) ..... **C471-472**

The rebate was too small ..... 11
It was too much of a hassle ..... 12
It was too late to apply ..... 13
You did not think about it ..... 14
You did not know about it ..... 15
Other (SPECIFY) _____ ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

**(GO TO Q49)**

| Q48 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 15 | 3 | 100.0 | 3 | 100.0 |

Frequency Missing = 73

**ASK EVERYONE:**

49. Did you install any T-8 lamp and electronic ballast fixtures in 1996? **C508-509**

Yes ..... 11 (ASK Q50)
No ..... 12 (GO TO Q55)
Don't Know ..... 77 (GO TO Q55)
Refused ..... 88 (GO TO Q55)

| Q49 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 2.6 | 2 | 2.6 |
| 12 | 72 | 94.7 | 74 | 97.4 |
| 77 | 2 | 2.6 | 76 | 100.0 |

**IF YES, ASK:**

50. How many of these fixtures did you install? **C510-512** (SPECIFY #)

| Q50 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 002 | 1 | 50.0 | 1 | 50.0 |
| 016 | 1 | 50.0 | 2 | 100.0 |

Frequency Missing = 74

51. Of these, how many replaced old fixtures? **C513-515** (SPECIFY #)

| Q51 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 1 | 50.0 | 1 | 50.0 |
| 2 | 1 | 50.0 | 2 | 100.0 |

Frequency Missing = 74

52. Why did you install the fixtures? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | **C516-517** |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | **C518-519** |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | **C520-521** |
| d. Your previous experience with the energy efficiency of new equipment | 11 | 12 | 77 | 88 | **C522-523** |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | **C524-525** |
| **f. New installation/new building/expansion** | **11** | **12** | **Not applicable** | | **C164-165** |

| Q52A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 74

| Q52B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 50.0 | 1 | 50.0 |
| 12 | 1 | 50.0 | 2 | 100.0 |

Frequency Missing = 74

| Q52C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 50.0 | 1 | 50.0 |
| 12 | 1 | 50.0 | 2 | 100.0 |

Frequency Missing = 74

| Q52D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 74

| Q52E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 74

| Q52F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 50.0 | 1 | 50.0 |
| 12 | 1 | 50.0 | 2 | 100.0 |

Frequency Missing = 74

53. How did you <u>first</u> learn about T-8 fixtures? (READ LIST) .....**C526-527**

You were contacted by someone at PG&E ..... 11
You were contacted by a contractor or vendor..... 12
Through media contact such as
a bill insert, TV, radio, or brochure..... 13
From word of mouth..... 14
From previously participating in a program..... 15
Other (DO NOT READ) ..... 16
Don't Know (DO NOT READ)..... 77
Refused (DO NOT READ)……88

| Q53 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 14 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 74

54. According to PG&E records you did not apply for a rebate for installing the fixtures. Why didn't you apply for a rebate? (READ LIST).....**C528-529**

The rebate was too small..... 11
It was too much of a hassle ..... 12
It was too late to apply..... 13
You did not think about it ..... 14
You did not know about it..... 15
Other (SPECIFY) _____..... 16
Don't Know (DO NOT READ)..... 77
Refused (DO NOT READ) ..... 88

**(GO TO Q55)**

| Q54 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 15 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 74

**ASK EVERYONE:**

55. Did you install any High Intensity Discharge, or HID, fixtures in 1996? **C530-531**

Yes.....11 (ASK Q56)
No .....12 (GO TO Q61)
Don't Know.....77 (GO TO Q61)
Refused .....88 (GO TO Q61)

| Q55 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 6 | 7.9 | 6 | 7.9 |
| 12 | 70 | 92.1 | 76 | 100.0 |

**IF YES, ASK:**

56. How many HID fixtures did you install? **C532-534** (SPECIFY #)

| Q56 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 2 | 33.3 | 2 | 33.3 |
| 4 | 1 | 16.7 | 3 | 50.0 |
| 5 | 2 | 33.3 | 5 | 83.3 |
| 12 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 70

57. Of these, how many replaced old fixtures? **C535-537** (SPECIFY #)

| Q57 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 1 | 16.7 | 1 | 16.7 |
| 000 | 2 | 33.3 | 3 | 50.0 |
| 001 | 1 | 16.7 | 4 | 66.7 |
| 004 | 2 | 33.3 | 6 | 100.0 |

Frequency Missing = 70

58. Why did you install HID fixtures? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | C538-539 |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | C540-541 |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | C542-543 |
| d. Your previous experience with the energy efficiency of new equipment | 11 | 12 | 77 | 88 | C544-545 |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | C546-547 |
| **f. New installation/new building/expansion** | **11** | **12** | **Not applicable** | | C166-167 |

| Q58A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 16.7 | 1 | 16.7 |
| 12 | 5 | 83.3 | 6 | 100.0 |

Frequency Missing = 70

| Q58B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 16.7 | 1 | 16.7 |
| 12 | 5 | 83.3 | 6 | 100.0 |

Frequency Missing = 70

| Q58C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 33.3 | 2 | 33.3 |
| 12 | 4 | 66.7 | 6 | 100.0 |

Frequency Missing = 70

| Q58D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 16.7 | 1 | 16.7 |
| 12 | 5 | 83.3 | 6 | 100.0 |

Frequency Missing = 70

| Q58E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 33.3 | 2 | 33.3 |
| 12 | 4 | 66.7 | 6 | 100.0 |

Frequency Missing = 70

Other responses
    Security
    Better lighting

| Q58F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 33.3 | 2 | 33.3 |
| 12 | 4 | 66.7 | 6 | 100.0 |

Frequency Missing = 70

59. How did you first learn about HID fixtures? (READ LIST) .....**C548-549**

You were contacted by someone at PG&E ..... 11
You were contacted by a contractor or vendor..... 12
Through media contact such as
a bill insert, TV, radio, or brochure..... 13
From word of mouth..... 14
From previously participating in a program..... 15
Other (DO NOT READ) ..... 16
Don't Know (DO NOT READ)..... 77
Refused (DO NOT READ)……88

| Q59 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 5 | 83.3 | 5 | 83.3 |
| 77 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 70

60. According to PG&E records, you did not apply for a rebate for installing HID fixtures. Why didn't you apply for a rebate? (READ LIST).....**C550-551**

The rebate was too small..... 11
It was too much of a hassle ..... 12
It was too late to apply..... 13
You did not think about it ..... 14
You did not know about it..... 15
Other (SPECIFY) _____..... 16
Don't Know (DO NOT READ)..... 77
Refused (DO NOT READ) ..... 88

**(GO TO Q61)**

| Q60 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 1 | 16.7 | 1 | 16.7 |
| 15 | 4 | 66.7 | 5 | 83.3 |
| 16 | 1 | 16.7 | 6 | 100.0 |

Frequency Missing = 70

Other responses
Got rebate in 1995 but installed in 1996

**ASK EVERYONE:**

61. Did you install any energy-efficient motors in 1996? **C552-553**

Yes ..... 11 (ASK Q62)
No ..... 12 (GO TO Q67)
Don't Know ..... 77 (GO TO Q67)
Refused ..... 88 (GO TO Q67)

| Q61 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 12 | 15.8 | 12 | 15.8 |
| 12 | 63 | 82.9 | 75 | 98.7 |
| 77 | 1 | 1.3 | 76 | 100.0 |

**IF YES, ASK:**

62. How many energy-efficient motors and of what horsepower did you install without a rebate? (FOR EXAMPLE: "__5__ MOTORS AT __25__ HORSEPOWER")

a. (SPECIFY #) **_C554-556_** motors at **_C557-559_** (SPECIFY HORSEPOWER)

| Q62A1 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 3 | 25.0 | 3 | 25.0 |
| 2 | 3 | 25.0 | 6 | 50.0 |
| 3 | 3 | 25.0 | 9 | 75.0 |
| 4 | 1 | 8.3 | 10 | 83.3 |
| 6 | 1 | 8.3 | 11 | 91.7 |
| 20 | 1 | 8.3 | 12 | 100.0 |

Frequency Missing = 64

| Q62A2 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 001 | 3 | 25.0 | 3 | 25.0 |
| 002 | 1 | 8.3 | 4 | 33.3 |
| 003 | 1 | 8.3 | 5 | 41.7 |
| 010 | 2 | 16.7 | 7 | 58.3 |
| 025 | 1 | 8.3 | 8 | 66.7 |
| 030 | 1 | 8.3 | 9 | 75.0 |
| 040 | 2 | 16.7 | 11 | 91.7 |
| 150 | 1 | 8.3 | 12 | 100.0 |

Frequency Missing = 64

b. (SPECIFY #) **C560-562** motors at **C563-565** (SPECIFY HORSEPOWER)

| Q62B1 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 2 | 50.0 | 2 | 50.0 |
| 2 | 2 | 50.0 | 4 | 100.0 |

Frequency Missing = 72

| Q62B2 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 1 | 25.0 | 1 | 25.0 |
| 2 | 1 | 25.0 | 2 | 50.0 |
| 5 | 1 | 25.0 | 3 | 75.0 |
| 40 | 1 | 25.0 | 4 | 100.0 |

Frequency Missing = 72

c. (SPECIFY #) **C566-568** motors at **C569-571** (SPECIFY HORSEPOWER)

| Q62C1 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 2 | 2 | 100.0 | 2 | 100.0 |

Frequency Missing = 74

| Q62C2 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 001 | 1 | 50.0 | 1 | 50.0 |
| 005 | 1 | 50.0 | 2 | 100.0 |

Frequency Missing = 74

d. (SPECIFY #) **C572-574** motors at **C575-577** (SPECIFY HORSEPOWER)

| Q62D1 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 1 | 100.0 | 1 | 100.0 |

Frequency Missing = 75

| Q62D2 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 8 | 1 | 100.0 | 1 | 100.0 |

Frequency Missing = 75

63. Of these, how many replaced old motors? **C578-580** (SPECIFY #)

| Q63 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 00& | 1 | 8.3 | 1 | 8.3 |
| 000 | 3 | 25.0 | 4 | 33.3 |
| 001 | 2 | 16.7 | 6 | 50.0 |
| 002 | 1 | 8.3 | 7 | 58.3 |
| 003 | 2 | 16.7 | 9 | 75.0 |
| 006 | 1 | 8.3 | 10 | 83.3 |
| 007 | 1 | 8.3 | 11 | 91.7 |
| 020 | 1 | 8.3 | 12 | 100.0 |

Frequency Missing = 64

64. Why did you install these energy-efficient motors? Was it because: (ITEM)?

| (READ ITEMS ONE AT A TIME AND RECORD RESPONSE FOR EACH) | Yes | No | Don't Know | Refused | |
|---|---|---|---|---|---|
| a. The equipment was broken | 11 | 12 | 77 | 88 | **C608-609** |
| b. The current equipment was not performing well | 11 | 12 | 77 | 88 | **C610-611** |
| c. You wanted to improve equipment reliability | 11 | 12 | 77 | 88 | **C612-613** |
| d. Your previous experience with the energy efficiency of new equipment | 11 | 12 | 77 | 88 | **C614-615** |
| e. Any other reason? (SPECIFY) _____ | 11 | 12 | 77 | 88 | **C616-617** |
| **f. New installation/new building/expansion** | **11** | **12** | **Not applicable** | | **C168-169** |

| Q64A | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 9 | 75.0 | 9 | 75.0 |
| 12 | 3 | 25.0 | 12 | 100.0 |

Frequency Missing = 64

| Q64B | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 16.7 | 2 | 16.7 |
| 12 | 9 | 75.0 | 11 | 91.7 |
| 77 | 1 | 8.3 | 12 | 100.0 |

Frequency Missing = 64

| Q64C | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 4 | 33.3 | 4 | 33.3 |
| 12 | 7 | 58.3 | 11 | 91.7 |
| 77 | 1 | 8.3 | 12 | 100.0 |

Frequency Missing = 64

| Q64D | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 2 | 16.7 | 2 | 16.7 |
| 12 | 9 | 75.0 | 11 | 91.7 |
| 77 | 1 | 8.3 | 12 | 100.0 |

Frequency Missing = 64

| Q64E | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 8.3 | 1 | 8.3 |
| 12 | 11 | 91.7 | 12 | 100.0 |

Frequency Missing = 64

Other responses
    Incentive from pump company came with new pump

| Q64F | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 3 | 25.0 | 3 | 25.0 |
| 12 | 9 | 75.0 | 12 | 100.0 |

Frequency Missing = 64

65. How did you first learn about energy-efficient motors? (READ LIST) **C618-619**

You were contacted by someone at PG&E ..... 11
You were contacted by a contractor or vendor ..... 12
Through media contact such as
a bill insert, TV, radio, or brochure ..... 13
From word of mouth ..... 14
From previously participating in a program ..... 15
Other (DO NOT READ) ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88

| Q65 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 1 | 8.3 | 1 | 8.3 |
| 12 | 8 | 66.7 | 9 | 75.0 |
| 16 | 1 | 8.3 | 10 | 83.3 |
| 77 | 2 | 16.7 | 12 | 100.0 |

Frequency Missing = 64

66. According to PG&E records, you did not apply for a rebate for installing efficient motors. Why didn't you apply for a rebate? (READ LIST) ..... **C620-621**

The rebate was too small ..... 11
It was too much of a hassle ..... 12
It was too late to apply ..... 13
You did not think about it ..... 14
You did not know about it ..... 15
Other (SPECIFY) _____ ..... 16
Don't Know (DO NOT READ) ..... 77
Refused (DO NOT READ) ..... 88
**The rebate was too small AND it was too much of a hassle ..... 19**

**(GO TO Q67)**

| Q66 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 12 | 3 | 23.1 | 3 | 23.1 |
| 15 | 6 | 46.2 | 9 | 69.2 |
| 16 | 2 | 15.4 | 11 | 84.6 |
| 19 | 1 | 7.7 | 12 | 92.3 |
| 77 | 1 | 7.7 | 13 | 100.0 |

Frequency Missing = 63

Other responses
Told no rebate program available
Handled by contractor

67. Those are all the questions I have. On behalf of PG&E, I greatly appreciate your time and cooperation in this survey. Thank you very much.

**NOTE: IF RESPONDENT REQUESTED CONTACT INFORMATION FOR PG&E, CHECK BOX AT BOTTOM OF CONTACT RECORD SHEET.**
**NOTE: IF RESPONDENT WANTED COMMENTS FORWARDED TO PG&E, ENTER THEM HERE:** _____
_____

**RESPONDENT NAME:** _____

**SAMPLE ID NUMBER:** C124-129 AND C622-627

**INTERVIEWER ID:** _____

**TIME ENDED:** C628-632

**DATE:** C130-135

Reasons for Refusing the Survey

| Final disposition 11/5/97 | Total | EEI non-participant | |
|---|---|---|---|
| | | Lighting | Pumping |
| No ans. on last attempt/Ans. Mach. | 24 | 10 | 14 |
| Respondent not avail. on last attempt | 29 | 7 | 22 |
| Disconnected/fax (no listing with direct. asst.) | 6 | 1 | 5 |
| Wrong number (no listing with direct. asst.) | 11 | 3 | 8 |
| Refusal (before contact determined) | 9 | 2 | 7 |
| Refusal (by correct contact) | 23 | 12 | 11 |
| Other | 12 | 7 | 5 |
| Completes | 76 | 34 | 42 |
| Total | 190 | 76 | 114 |

# Appendix D - Final EMS Participant Telephone Survey with Response Frequencies

START OF SURVEY
TIME STARTED: _____ **C109-116**

Following three questions from Market Transformation survey are used for calculating the number of pumps repaired by EMS participants.

**ASK EVERYONE:**

Now I'm going to ask you some questions regarding pump repairs and pump tests.

28. Did your business or organization repair any deep well pumps since January 1996? **C378-379**

Yes ..... 11 (ASK Q29 and Q30)
No ..... 12 (GO TO Q31)
Don't Know ..... 77 (GO TO Q31)
Refused ..... 88 (GO TO Q31)

| Q28 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 11 | 161 | 46.0 | 161 | 46.0 |
| 12 | 183 | 52.3 | 344 | 98.3 |
| 77 | 5 | 1.4 | 349 | 99.7 |
| 88 | 1 | 0.3 | 350 | 100.0 |

**IF Q28 = YES, ASK:**

29. How many? **C408-411** (# REPAIRED SINCE JAN. 1996)

| Q29 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 1 | 83 | 51.6 | 83 | 51.6 |
| 2 | 27 | 16.8 | 110 | 68.3 |
| 3 | 13 | 8.1 | 123 | 76.4 |
| 4 | 15 | 9.3 | 138 | 85.7 |
| 5 | 6 | 3.7 | 144 | 89.4 |
| 6 | 5 | 3.1 | 149 | 92.5 |
| 7 | 3 | 1.9 | 152 | 94.4 |
| 8 | 1 | 0.6 | 153 | 95.0 |
| 10 | 3 | 1.9 | 156 | 96.9 |
| 12 | 2 | 1.2 | 158 | 98.1 |
| 15 | 1 | 0.6 | 159 | 98.8 |
| 30 | 1 | 0.6 | 160 | 99.4 |
| 100 | 1 | 0.6 | 161 | 100.0 |

Frequency Missing = 189

30. How many of these pumps were/Was this pump repaired simply as a result of equipment breakdown? **C412-415** (# REPAIRED DUE TO BREAKDOWN)

| Q30 | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|---|---|---|---|---|
| 0 | 34 | 21.1 | 34 | 21.1 |
| 1 | 74 | 46.0 | 108 | 67.1 |
| 2 | 21 | 13.0 | 129 | 80.1 |
| 3 | 9 | 5.6 | 138 | 85.7 |
| 4 | 9 | 5.6 | 147 | 91.3 |
| 5 | 5 | 3.1 | 152 | 94.4 |
| 6 | 3 | 1.9 | 155 | 96.3 |
| 7 | 1 | 0.6 | 156 | 96.9 |
| 8 | 1 | 0.6 | 157 | 97.5 |
| 10 | 1 | 0.6 | 158 | 98.1 |
| 15 | 1 | 0.6 | 159 | 98.8 |
| 30 | 1 | 0.6 | 160 | 99.4 |
| 50 | 1 | 0.6 | 161 | 100.0 |

Frequency Missing = 189

# Appendix E - Engineering Technical Analysis

### *Overview*

The engineering analyses covered in this appendix resulted in estimates of the gross energy and demand impact for both the 1996 Agricultural Energy Efficiency Incentives (AEEI) and the 1996 Agricultural Energy Management Services (AEMS) Programs. The analyses used information gathered during on-site surveys from a census of the AEEI participants and from telephone surveys of a sample of AEMS participants.

The 1996 AEEI program encompasses two end uses, pumping and indoor lighting (miscellaneous end uses were not evaluated). The methodology will be discussed briefly (the complete write up is in the body of the report), then details of each separate analysis will be presented, along with the results. The AEMS program analysis follows the indoor lighting end use discussion. First, information regarding the sources of data used in the analyses is presented.

### *Data Sources*

The engineering analyses used information gathered during on-site audits for the AEEI participants. Exhibit E.1 shows the break down, by end use, of the participant population and completed audits.

**Exhibit E.1**
**Completed Participant On-Site Audits**

| | **Pumping End Use** | **Indoor Lighting End Use** |
|---|---|---|
| **Participant Population Applications** | 91 | 70 |
| **On-Site Audited Applications** | 74 | 54 |
| **Completion Percentage** | 81% | 77% |

The indoor lighting end use had no other data sources for the analysis. The on-site audit consisted of a short interview with the owner to determine if any productivity changes had resulted from the change in lighting. Then the rebated fixtures were verified and grouped into similar schedules. Information about when the lights were used throughout the year was collected. Lights were counted and the current status of the lights were determined (i.e., how many were on). A retention panel was created for the rebated lights.

In addition to the participants shown in Exhibit E.1, the pumping end use gathered information from a group of 68 nonparticipants. The on-site audits consisted of a pump test, follow up information about the pump, and any other loads on the meter. There are four measures within the pumping end use. Three of the measures had pump tests performed during the on-site audit (pump repair, low pressure sprinkler nozzle, and micro drip conversion). Custom sites (eight applications) had an audit, but no pump test. Exhibit E.2 presents the pump tests performed by measure. Of the remaining ten applications within the pumping end use, eight are Custom sites and two are pumping adjustment measures which were not analyzed.

**Exhibit E.2**
**Pump Tests by Measure**

| | Pump Repair | Low Pressure Sprinkler Nozzles | Micro-drip Irrigation Conversion | Nonparticipants |
|---|---|---|---|---|
| **# Paid Applications** | 67 | 3 | 11 | NA |
| **# Unique Customers** | 46 | 3 | 6 | 49 |
| **# Pump Tests** | 46 | 2 | 18 (10 Apps) | 68 |
| **Completion Percentage** | 69% | 69% | 91% | NA |

Exhibit E.3 shows the completed pump tests by pump type and horsepower (hp) bin. Submersible pumps have been included under the turbine pump type, as have turbine boosters and deep well pumps.

**Exhibit E.3**
**Pump Tests by Pump Type and Horsepower Bin**

| hp | Type of Pump | Participant | Nonparticipant |
|---|---|---|---|
| < 20 | Axial/Propeller | 1 | 4 |
| | Centrifugal | 0 | 0 |
| | Turbine | 2 | 12 |
| *Total Bin 1* | | *3* | *16* |
| 20 - 75 | Axial/Propeller | 2 | 1 |
| | Centrifugal | 5 | 0 |
| | Turbine | 32 | 36 |
| *Total Bin 2* | | *39* | *37* |
| > 75 | Axial/Propeller | 7 | 4 |
| | Centrifugal | 0 | 0 |
| | Turbine | 17 | 11 |
| *Total Bin 3* | | *24* | *15* |
| **Total** | | **66** | **68** |

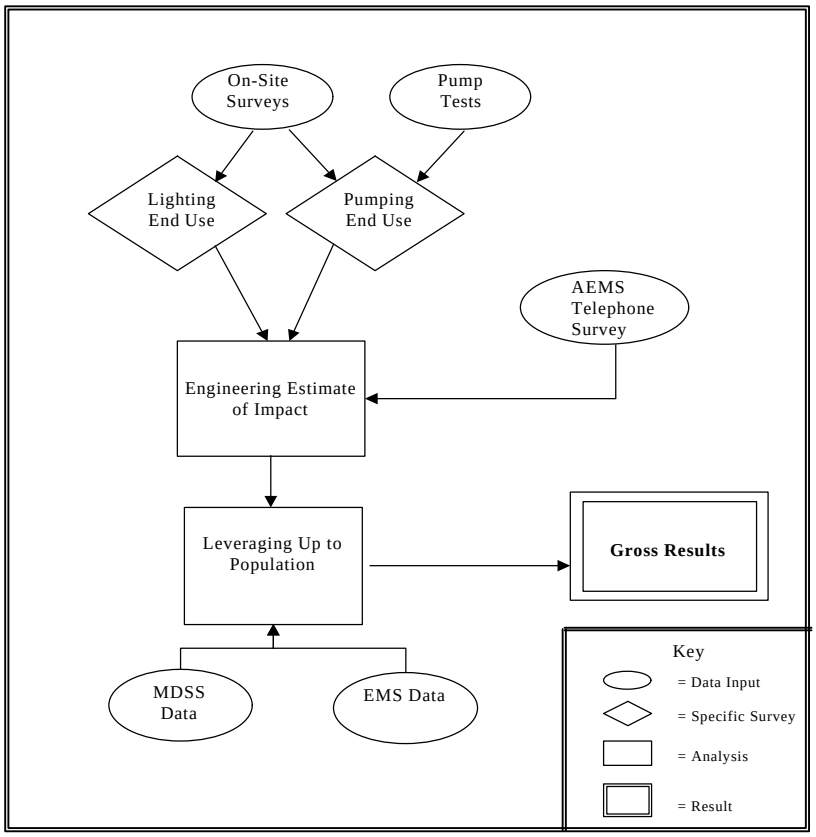
The AEMS analysis was based on information gathered during participant telephone surveys. The customer was asked if their business had repaired any deep well pumps since January, 1996. If so, they were then asked how many. A follow up question asked the customer to state how many of the pumps were “repaired simply as a result of equipment breakdown”. The AEMS analysis used 350 completed surveys.
Throughout the analysis, agricultural engineers on the Equipoise Team were also used as sources of information to check assumptions made or clarify questionable test results.

## *Pumping End Use*

### Methodology

The complete methodology section is provided within the body of the report. Exhibit E.4 presents an overview of the flow of information within the analysis.

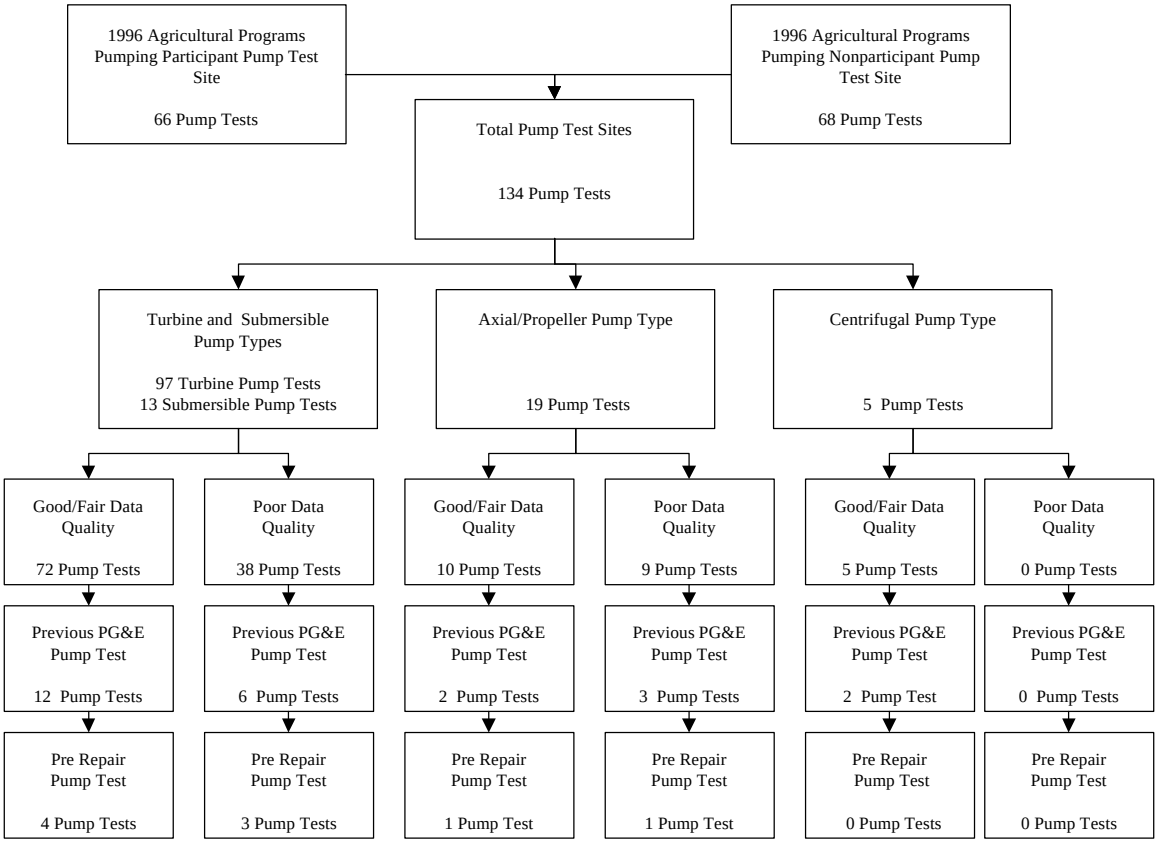
**Exhibit E.4**
**Method for Gross Impact Analysis**




The best laid plans can sometimes require re-thinking. In this analysis, the original plan was to use the evaluation pump tests as the post-repair information and PG&E pump test database information as the pre-repair information. (There are 25 participants with pump tests within the PG&E database.) However, data attrition due to poor quality pump test results in the evaluation pump tests and the determination that many of the participant PG&E pump tests were done AFTER the pump had been repaired, vastly decreased the number of possible pre- and post-repair pump test comparisons. Exhibit E.5 shows the breakdown of good and poor quality pump tests across both the participant and nonparticipant pump test sites. Data quality for pump tests were set by the two pump testers on the Equipoise Team. A pump test could be set as "poor" for multiple reasons, among them the unavailability of a long enough piece of piping for the test (and resultant turbulent flow) or inability to sound the well. Any difficulties during the pump test which would cause the results to be suspect, based on the experience of the pump testers, created a poor data quality rating. As Exhibit E.5 indicates, 65% of the tests provided good or fair results, while 35% had poor data quality. However, of the 25 pump tests within the PG&E database, only 9 were determined to actually have been performed prior to the pump repair. The

pre-and post-repair assignment of the PG&E pump test for each participant was based on the self-reported date of pump repair (gathered during the on-site audit) and the date of the pump test as recorded in the MDSS. If the date of pump repair was unknown, the date the rebate check was cut for the repair and the date of the pump test were compared to determine when the pump tests occurred.

**Exhibit E.5**
**Pump Test Data Quality**




With this new found dearth of information, additional information was sought and the original approach was modified. As much information was gleaned from the pump tests as possible and supplemented by information within the PG&E pump test database. The small sample within each pump type as shown in Exhibit E.3, especially for axial and centrifugal pumps, meant that multiple curve functions based on pump type, geographical location, and irrigation type could not be used as originally planned.

The pump repair measure energy impact was determined by applying an Overall Pump Efficiency (OPE) ratio to the 1996 billing data usage. The OPE ratio application, shown in Exhibit E.6, is similar to the approach used for the ex ante estimate of savings.

**Exhibit E.6**
**Engineering Pump Repair Algorithm**

$$\text{kWh Savings} = 1996\,\text{kWh} * \left(1 - \frac{\text{OPE}_{\text{pre}}}{\text{OPE}_{\text{post}}}\right)$$

To determine demand impact, the demand analysis used pre- and post-pump repair pump test data. The percent of motor load was analyzed to determine if there was an increase or decrease in the motor load (and therefore, the demand).
The analysis indicated that there was no change in the motor load pre- and post-repair. Therefore, no ex post kW savings were applied to pump repairs.
Both the low pressure sprinkler nozzle (LPSN) and micro-drip irrigation conversion (micro) energy and demand analysis methods relied heavily on the information gathered during the on-site audits and then moved the information to the population on a measure by measure basis. Details are discussed more fully below.

Results

*Pump Tests*

The participant pump test effort attempted a census of the population. The nonparticipant test schedule lagged the participant test schedule slightly to attempt to mimic the geographical location of the participants. As indicated in Exhibit E.7, this goal was met to a certain degree. Fresno was the one exception, where there was an overabundance of nonparticipants. The spread of tests was deemed to be acceptable for use within the analysis.

**Exhibit E.7**
**Pump Tests by PG&E Division**

| PG&E Division | Participants | Nonparticipants | Total |
|---|---|---|---|
| **Central Coast** | 5 | 6 | 11 |
| **Los Padres** | 10 | 7 | 17 |
| **North Valley** | 2 | 3 | 5 |
| **Sacramento / Sierra** | 3 | 6 | 9 |
| **Stockton** | 13 | 7 | 20 |
| **Fresno** | 1 | 19 | 20 |
| **Kern** | 30 | 19 | 49 |
| **Yosemite** | 2 | 1 | 3 |
| **Total** | 66 | 68 | 134 |

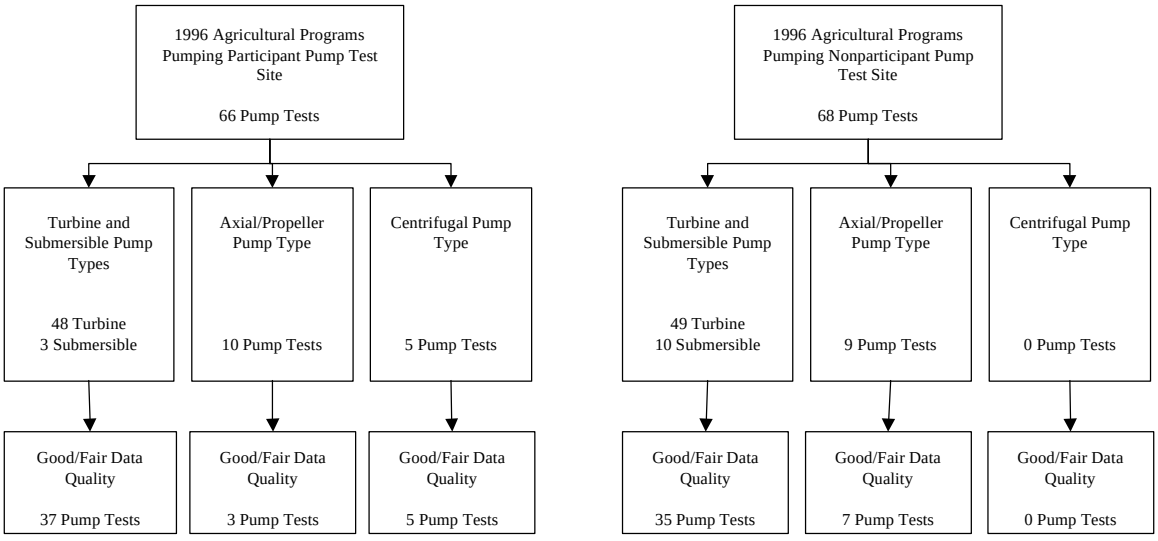
Exhibit E.8 breaks out the information from Exhibit E.3 into the specific pump type and where the pump was placed (i.e., deep well or booster). As is typical when a sample is further subdivided, the number of points within each cell goes down and becomes less useful within an analysis for leveraging to a population.

**Exhibit E.8**
**Pump Tests by Type and Placement**

| hp | Pump Type | Pump Placement | Participants | Nonparticipants |
|---|---|---|---|---|
| < 20 | Axial/Propeller | Well | 1 | 4 |
| | Centrifugal | Booster | 0 | 0 |
| | Submersible | Well | 0 | 8 |
| | Turbine | Booster | 2 | 0 |
| | Turbine | Well | 0 | 4 |
| *Total Bin 1* | | | *3* | *16* |
| 20 - 75 | Axial/Propeller | Well | 2 | 1 |
| | Centrifugal | Booster | 5 | 0 |
| | Submersible | Well | 2 | 2 |
| | Turbine | Booster | 15 | 1 |
| | Turbine | Well | 15 | 33 |
| *Total Bin 2* | | | *39* | *37* |
| > 75 | Axial/Propeller | Well | 7 | 4 |
| | Centrifugal | Booster | 0 | 0 |
| | Submersible | Well | 1 | 0 |
| | Turbine | Booster | 2 | 1 |
| | Turbine | Well | 14 | 10 |
| *Total Bin 3* | | | *24* | *15* |
| **Total** | | | 66 | 68 |

The number of good and fair pump tests by participation and pump type is shown below in Exhibit E.9.

**Exhibit E.9**
**Good Pump Tests by Participation and Pump Type**




Each of the pump tests were used to the fullest extent possible within the AEEI analyses of the various measures.

*Pump Repair*

The energy analysis will be discussed first, followed by the demand analysis. After the data was compiled and prior to any analysis of pre- and post-pump tests, the pump test data was compared between the participants and nonparticipants. The statistical t-test (one-tailed) was used to see if the differences between the two groups were significant at the 90% confidence level. Only pump types with greater than ten sample points in each group were tested with the t-test. Smaller sample groups were compared only on a point basis, with no significance applied to the result. Therefore, while there are average differences between small sample groups, no analysis decisions were based upon those differences. The nonparticipant pump tests were collected based on the original analysis plan. However, with the changes to the analysis, the comparison between the participant and nonparticipant pump tests merely provided a touch stone of reality to the pre-/post-analysis and nothing more. When all pump types are compared between the participants and nonparticipants, the average OPE difference was 7.7% (with the participants having the higher average OPE), and indicated a significant difference at the 90% confidence level.
The algorithm used to determine the energy impact for pump repair is shown in Exhibit E.6. There were five participant pump repair sites with both a good pump test and pre-repair pump test data from the PG&E database. Of these, four were deep well turbine pumps and one was a submersible turbine. Since the evaluation could not rest on these few pre- and post-tests, the only other source of pre- and post-data was analyzed. Within the 1995/96 PG&E pump test database is a variable stating 'Pump Test Type'. This variable has multiple choices, two of which are 'routine' and 'after pump repair'. Each pump test represents a single test. The database contains many tests which appear to have been made on the same pump, only at different times. Tests which were made on the same pump and had both a 'routine' and 'after pump repair' designation were pulled from the database and analyzed. The tests were determined to be on the same pump based on the horsepower of the pump and the meter number. Only those pump tests with a 'routine' pump test prior to the 'after pump repair' were kept. As shown in Exhibit E.10, there were mainly turbine pumps with pre- and post-pump repair data.

**Exhibit E.10**
**PG&E Pump Test Pre- and Post-Tests by Pump Type**

| Pump Type | Number of Pre- / Post-Tests |
|---|---|
| **Mixed Flow** | 2 |
| **Propeller** | 2 |
| **Submersible** | 3 |
| **Turbine** | 22 |
| **Vertical Turbine** | 2 |
| **Booster** | |
| **Total** | 31 |

The submersible and turbine OPEs were taken from the PG&E database for the 3 submersible and 22 turbine pump tests with both a pre- and post-pump repair. Additionally, three growers with good post-pump test data from the evaluation had had pump tests performed on the pumps by independent pump testers prior to the pump repair and were able to find the results. Exhibit E.11 indicates the results of this analysis. The more conservative OPE ratio from the turbine pumps of 0.14 was used to determine the impact of the program.

**Exhibit E.11**
**Pre- and Post-OPE**

| Type of Pump | Source of Data | Number of Points | Old OPE | Evaluation OPE | OPE Difference | OPE Ratio |
|---|---|---|---|---|---|---|
| **Submersible** | Evaluation | 1 | 0.54 | 0.64 | 0.100 | 0.16 |
| **Submersible** | PG&E Database | 3 | 0.34 | 0.40 | 0.064 | 0.15 |
| **Weighted Submersible** | Both | 4 | 0.39 | 0.46 | 0.073 | 0.16 |
| **Turbine** | Evaluation | 1 | 0.47 | 0.65 | 0.185 | 0.28 |
| **Turbine** | Evaluation | 1 | 0.29 | 0.61 | 0.319 | 0.52 |
| **Turbine** | Evaluation | 1 | 0.47 | 0.56 | 0.095 | 0.17 |
| **Turbine** | Evaluation | 1 | 0.26 | 0.63 | 0.371 | 0.59 |
| **Turbine** | Evaluation | 1 | 0.60 | 0.67 | 0.069 | 0.10 |
| **Turbine** | Evaluation | 1 | 0.61 | 0.70 | 0.085 | 0.12 |
| **Turbine** | Evaluation | 1 | 0.57 | 0.60 | 0.033 | 0.05 |
| **Turbine** | PG&E Database | 22 | 0.54 | 0.60 | 0.061 | 0.10 |
| **Weighted Turbine** | Both | 29 | 0.52 | 0.61 | 0.086 | 0.14 |

The OPE ratio was applied to the summed 1996 kWh billing data to determine the program impact. However, the actual billing data does not reflect only the pump repaired because some meters have other loads. This appeared to be especially true for axial pumps which were moving great quantities of water using large horsepower pumps. The on-site audits had collected the other loads on the meters. All other loads were taken out of the known accounts. Any non-audited sites used the actual billing data. The MDSS indicates the pump usage for 12 months prior to the repair. While that information is mainly for 1995 energy usage, the individual account energy use values for the 1995 billing data and the MDSS did not always match. However, the sum of the MDSS and the 1995 billing data (with other loads removed), were within 2% of each other, with the estimated 1995 billing data being slightly lower than the MDSS. This was considered acceptable, and the same load percents were removed for specific accounts for the 1996 energy usage. Exhibit E.13 indicates the usage of the pump repair participants and the program level impact.

The demand analysis used the same pre- and post-pump repair sites as the energy analysis. The three sites with independent pump test information provided by the growers did not have the motor load value provided. Therefore, the pre- and post-motor loads were based on twenty-six turbine pumps.

**Exhibit E.12**
**Pre- and Post-Motor Loads**

| Type of Pump | Source of Data | Number of Points | Old Motor Load | Evaluation Motor Load | Difference |
|---|---|---|---|---|---|
| **Submersible** | Evaluation | 1 | 0.51 | 1.07 | 0.56 |
| **Submersible** | PG&E Database | 3 | 0.75 | 0.81 | 0.06 |
| **Weighted Submersible** | Both | 4 | | | 0.18 |
| **Turbine** | Evaluation | 1 | 0.95 | 0.88 | -0.07 |
| **Turbine** | Evaluation | 1 | 1.06 | 0.85 | -0.21 |
| **Turbine** | Evaluation | 1 | 1.07 | 1.09 | 0.02 |
| **Turbine** | Evaluation | 1 | 0.84 | 0.91 | 0.07 |
| **Turbine** | PG&E Database | 22 | 1.01 | 1.03 | 0.02 |
| **Weighted Turbine** | Both | 26 | | | 0.01 |

The motor loads were only slightly greater post-repair than pre-repair. The 80% confidence interval around the average includes zero. Because of this, the demand impact was set to zero for the evaluation.

**Exhibit E.13**
**Pump Repair Measure - Program Usage and Impacts**

| | kWh | kW |
|---|---|---|
| **MDSS** | 19,363,469 | - |
| **1995 Billing Data** | 19,035,731 | - |
| **1996 Billing Data** | 20,058,575 | - |
| **OPE Ratio** | 0.14 | - |
| **Ex Post Impact** | 2,831,503 | 0 |
| **Ex Ante Impact** | 1,858,469 | 323 |
| **Gross Realization Rate** | 1.52 | 0 |

*Pump Adjustments*

The pump adjustment measure obtained a waiver such that the analysis consisted of a review of the ex ante estimate with adjustment if needed. The ex ante estimate was reviewed and found to have used a savings estimate of 11% of the average pump usage of 125,910 kWh. From previous evaluation of this measure, a pump adjustment most likely provides from 1.5% to 2% of savings of the energy used. Therefore, the savings percent for this measure was reduced from 11% to 1.5%, decreasing the ex ante value of 13,573 kWh to and ex post value of 3,777 kWh. There are no demand savings for this measure.

*Low Pressure Sprinkler Nozzle*

There were 3 low pressure sprinkler nozzle (LPSN) applications representing 21,720 nozzles. The evaluation team visited 2 sites where 6,400 nozzles were installed. One of the sites was also paid for 12,500 more nozzles than installed at the site visited. That grower was queried about how they installed the other nozzles to determine how best to provide impacts to the population. The on-site audit collected the pumping accounts which had been affected by the LPSN. This was required since one application was for a portable system and the other application was for a permanent system which applied for the nozzles under a single account although they were used across more than one account when actually installed. Energy analysis will be discussed first, followed by the demand analysis, and then moving the results to the population .
Certain assumptions were made during the LPSN analysis. It was assumed that the OPE of the old and new system were the same because neither audited site changed their pumping system. It was also assumed that the irrigation efficiency (IE) of the old system and the new system were the same. Therefore, there was no assumed difference between the acre feet (AF) of water pumped in 1996 and what would have been pumped with the old high pressure sprinkler system. These are conservative assumptions. The nozzle pressures in pounds per square inch (psi) for the pre- and post-nozzles were based on grower self-report. Given these assumptions, the engineering algorithms used to determine the kWh / nozzle impact are shown in Exhibit E.14.

**Exhibit E.14**
**LPSN Engineering Energy Algorithms**

(1) Post total dynamic head (TDH) from nozzles = post psi * 2.31 ft/psi
(2) Post TDH outside of nozzles = Actual TDH from pump test – (1)
(3) Pre TDH = pre psi * 2.31 ft/psi + (2)
(4) AF = 1996 kWh / $(kWh/AF)_{from\ pump\ test}$
(5) kWh / $AF_{pre}$ = 1.0241 kWh/(AF ft)* (3) / pre OPE
(6) $kWh_{pre}$ = (4) * (5)
(7) kWh Impact = kWh 1996 – (6)
(8) kWh / nozzle impact = (7) / nozzles installed

Of the two sites audited, one had made no actual change to the TDH since they simply installed a butterfly valve to decrease the pressure to the nozzles. This site received no energy or demand impacts. The other site had extended the acreage irrigated, thereby decreasing the actual pressure at the pump. This site received the estimated kWh/nozzle impact as determined in the evaluation. The demand analysis used an approach similar to the ex ante algorithms. The TDH difference value used the estimated pre-TDH from the energy analysis. The post-TDH value came from the pump test. The engineering algorithms are shown in Exhibit E.15.

**Exhibit E.15**
**LPSN Engineering Demand Algorithms**

(1) Delta hp = ($GPM_{from\ pump\ test}$) * delta TDH / (3960 GPM Ft/hp* current OPE)
(2) Delta hp / acre = (1) / acres irrigated
(3) Nozzles / acre = nozzles found at site / acres irrigated
(4) Delta kW / nozzle = (2) * 0.746 kW/hp / (3)
(5) Peak kW / nozzle impact = (4) * Coincident Diversity Factor of 0.78

The evaluation team discussed how the additional non-audited nozzles had been installed at one site with the grower. It was determined that all systems increased the acreage irrigated. Since there were only three applications within this measure, moving to the population consisted of setting one application's impact to zero (the site with the butterfly valve), multiplying the number of rebated nozzles with the kWh/nozzle and peak kW/nozzle at the one site with known correct decreasing of pressure, and using an average per nozzles energy and demand impact weighted by paid units for the third site. The results are shown in Exhibit E.16.

**Exhibit E.16**
**LPSN Measure - Program Impacts**

| | *MDSS Information* | | | | | *Estimated Impact* | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site | P_KWH | P_KW | Ex ante kWh / Nozzle | Ex ante kW / Nozzle | P_Units | kWh | kW | Ex Post kWh / Nozzle | Ex Post kW / Nozzle |
| 1 | 16,800 | 6.0 | 12 | 0.0082 | 1,400 | - | - | - | - |
| 2 | 39,480 | 5.9 | 14 | 0.0040 | 2,820 | 51,840 | 4.7 | 18.4 | 0.0021 |
| 3 | 175,000 | 26.3 | 10 | 0.0029 | 17,500 | 411,777 | 37.5 | 23.5 | 0.0027 |
| | | | | | **Impact** | **463,617** | **42** | | |
| | | | | | **Gross Realization Rate** | **2.00** | **1.11** | | |

The site specific details of the analysis are shown at the end of this appendix on the pages labeled Exhibit E.33, LPSN analysis.

*Micro-drip Irrigation Conversion*

The micro-drip irrigation conversion (micro) sites totaled eleven applications representing six unique customers. The on-site audits went to ten of the applications and five of the unique customers. Five of the applications were short-coupled lift pumps. At those sites, each pump was tested, giving a total of eighteen pump tests for the ten applications.
The analysis of the micro sites used the pump test information in a fashion similar to the LPSN analysis. The estimated pre- and post-pressure of the systems were based on grower self-reports. The current system's IE was estimated in the field by expert auditors. The previous IE of the high pressure system relied upon information from the previous two Agricultural Program evaluations. All previous systems were high pressure, and the same pre-retrofit IE (0.76) was applied to all sites. All systems audited, except one, had changed out the pumps. The pre-OPE designated to each pump was based on the previous pump type. If the post-pump was a turbine booster and the pre-pump had been a centrifugal pump, the average OPE for 'routine' tests on centrifugal pumps within the PG&E pump test was applied (0.55) for the pre-retrofit OPE. If the both the post-and pre-pumps were turbine booster pumps, it was assumed that the retrofit also enhanced the pumping of the new pump. Based on the pump repair analysis, the pre-OPE was set to 8.5% less than the OPE found during the pump test. The one site which made no change had the same OPE applied pre- and post-conversion. The algorithms used in the analysis are shown in Exhibit E.17.

**Exhibit E.17**
**Micro Conversion Engineering Energy Algorithms**

(1) Post total dynamic head (TDH) from system = post psi * 2.31 ft/psi
(2) Post TDH outside of drip system = Actual TDH from pump test – (1)
(3) Pre TDH = pre psi * 2.31 ft/psi + (2)
(4) $AF_{post}$ = 1996 kWh / $(kWh/AF)_{\text{from pump test}}$
(5) $AF_{pre} = AF_{post}$ * post IE / pre IE
(6) $kWh / AF_{pre}$ = 1.0241 kWh/(AF ft)* (3) / pre OPE
(7) $kWh_{pre}$ = (5) * (6)
(8) kWh Impact = $kWh_{pre} - kWh_{post}$
(9) kWh / Acre Impact = (8) / Acres converted

There were four applications which replaced one large pump and with two or three smaller pumps for the micro conversion. All pumps were on one meter and each pump was tested during the evaluation. For each of these sites the auditor collected the percent of time each pump was run. The 1996 kWh data was parceled to each new pump based on this information. Each pump then used the algorithms in Exhibit E.17 to determine a kWh Impact for that pump. The values were summed across the pumps to obtain a savings for the site.
The demand savings were calculated using algorithms shown below. It was assumed that the systems run 22 hours per day when in use. Therefore, the peak kW equals the kW impact.

**Exhibit E.18**
**Micro Conversion Engineering Demand Algorithms**

(1) Delta TDH = Pre TDH – Post TDH
(2) kW Impact = (GPM from pump test) * (1) / (3960 GPM ft/hp* post OPE) * 0.746 kW/hp
(3) kW Impact / acre = (2) / acres converted

Since ten out of the eleven applications had had an on-site audit and pump testing done, there was little leveraging to move to the population. For the ten applications, the kWh impact determined in the analysis was used for the program impact. For the one application with no audit, a realization rate was determined for each of the ten applications and the average realization rate was applied to the ex ante estimate. For energy, the average realization rate applied to the non-audited site was 0.94.
The population estimates were calculated in the same manner as the energy estimates. The demand realization rate applied to the one non-audited site was 0.81. The program impacts are shown in Exhibit E.19.

**Exhibit E.19**
**Micro Drip Conversion Measure – Program Impacts**

| | ***MDSS Information*** | | | ***Evaluation Impacts*** | |
|---|---|---|---|---|---|
| Application | P_KWH | P_KW | P_UNITS (acres) | kWh | kW |
| 1 | 25,102 | 10.5 | 26 | 23,498 | 10.8 |
| 2 | 30,380 | 14.1 | 35 | 8,212 | 4.0 |
| 3 | 12,654 | 5.0 | 18 | 4,491 | 5.1 |
| 4 | 33,150 | 13.1 | 50 | 49,559 | 17.1 |
| 5 | 41,769 | 16.5 | 63 | 34,350 | 17.4 |
| 6 | 53,040 | 21.0 | 80 | 46,964 | 76.9 |
| 7 | 238,005 | 176.5 | 387 | 367,811 | 110.3 |
| 8 | 238,005 | 176.5 | 387 | 274,868 | 119.1 |
| 9 | 177,120 | 131.3 | 288 | 192,644 | 70.2 |
| 10 | 137,145 | 101.7 | 223 | 163,926 | 72.2 |
| 11 | 44,405 | 21.2 | 107 | 24,399 | 8.5 |
| | | | **Impact** | **1,190,723** | **511.7** |
| | | | **Gross Realization Rate** | **1.16** | **0.74** |

The site specific details of the analysis are shown at the end of this appendix on the pages labeled Exhibit E.34 – Micro-Drip Conversion Analysis.

*Custom Applications*

There were seven Custom Incentives (CI) applications and one Advanced Performance Options (APO) application. All were audited. Engineering reviews were performed on each application in order to assess the assumptions and algorithms used for each site. Any changes to the sites result in a change in the ex ante estimate of impact. The reviews are presented next, grouped by the type of application.

***Pacific Gas & Electric 1996 Agricultural Program – Custom Rebate Assessment***

***Drip Irrigation Conversion***

| Recommendation | **None** |
|---|---|
| **Technology Description** | Micro drip system installed |
| **Number of Sites Reviewed** | 2 |
| **Assessment of Assumptions** | Assumptions appear reasonable |
| **Assessment of Algorithms** | Reviewed and deemed appropriate |
| **On-Site Assessment** | Systems in place and working as shown in paperwork. |

***Pacific Gas & Electric 1996 Agricultural Program – Custom Rebate Assessment***

***Enhanced Irrigation Well***

| Recommendation | **None** |
|---|---|
| **Technology Description** | Design and construction features of the well produce energy savings from reduced lift. |
| **Number of Sites Reviewed** | 1 |
| **Assessment of Assumptions** | Assumption appears high for pump efficiency, but provided conservative estimate of savings. Therefore, no change recommended |
| **Assessment of Algorithms** | Reviewed and deemed appropriate |
| **On-Site Assessment** | Systems in place and working as shown in paperwork |

***Pacific Gas & Electric 1996 Agricultural Program – Custom Rebate Assessment***

***Pump Repair on Natural Gas Engine***

| Recommendation | **None** |
|---|---|
| **Technology Description** | Repair bowls for natural gas engine pumping system. |
| **Number of Sites Reviewed** | 3 |
| **Assessment of Assumptions** | Assumptions appear reasonable |
| **Assessment of Algorithms** | Reviewed and deemed appropriate |
| **On-Site Assessment** | Systems in place and working as shown in paperwork |

***Pacific Gas & Electric 1996 Agricultural Program – Custom Rebate Assessment***

***Refrigeration for Berries***

| Recommendation | **Decrease Peak kW Impact** |
|---|---|
| **Technology Description** | Installation of pressure cooling with VSD fans. Replacement of compressor and condenser system with change from ammonia to hydrocarbon refrigerant. |
| **Number of Sites Reviewed** | 1 |
| **Assessment of Assumptions** | Assumptions appear reasonable |
| **Assessment of Algorithms** | Reviewed and deemed appropriate |
| **On-Site Assessment** | System in place and functional as shown in paperwork. |

***Pacific Gas & Electric 1996 Agricultural Program – Custom Rebate Assessment***

***Irrigation Supply Piping***

| Recommendation | **None** |
|---|---|
| **Technology Description** | Change out of 10” diameter pipe to a 12” diameter PVC pipe to enhance flow. |
| **Number of Sites Reviewed** | 1 |
| **Assessment of Assumptions** | Assumptions appear reasonable |
| **Assessment of Algorithms** | Reviewed and deemed appropriate |
| **On-Site Assessment** | System in place and working as indicated in paperwork. |

The population impact results of the custom sites are shown below in Exhibit E.20.

**Exhibit E.20**
**Custom Sites - Program Impacts**

| | **kWh** | **kW** | **Therm** |
|---|---|---|---|
| **Ex Ante Impact** | 406,258 | 315 | 110,743 |
| **Ex Post Impact** | 406,258 | 298 | 110,743 |
| **Gross Realization Rate** | 1.00 | 0.95 | 1.00 |

***Lighting End Use***

Methodology

The methodology for the lighting end use is provided in greater detail within the body of the report. Exhibit E.4 shows the method used for the analysis of gross impacts. The engineering analysis provided the estimates of both energy and demand impacts.

Results

There were 70 measures, representing 51 unique customers, paid under the 1996 Agricultural programs. Of these, on-site audits visited 54 measures and 42 unique customers. There were a variety of SIC codes within the evaluation, as shown in Exhibit E.21 and Exhibit E.22.

**Exhibit E.21**
**Unique Customers by SIC Description**

| SIC DESCRIPTION | MDSS | On Site Audit |
|---|---|---|
| ANIMAL SPECIALITIES, NEC | 1 | 1 |
| BROILER, FRYER, AND ROASTER CHICKENS | 3 | 3 |
| CROP PREPARATION SERVICES FOR | 11 | 10 |
| DAIRY FARMS | 5 | 4 |
| DECIDUOUS TREE FRUITS | 1 | 0 |
| FOOD CROPS GROWN UNDER COVER | 3 | 3 |
| FOREST PRODUCTS | 1 | 1 |
| FORESTRY SERVICES | 1 | 1 |
| FRUITS AND TREE NUTS, NEC | 1 | 1 |
| GENERAL FARMS, PRIMARILY CROP | 5 | 4 |
| GRAPES | 4 | 3 |
| IRRIGATION SYSTEMS | 1 | 1 |
| ORNAMENTAL NURSERY PRODUCTS | 6 | 4 |
| POULTRY AND EGGS | 1 | 1 |
| REFRIGERATED WAREHOUSING AND | 3 | 3 |
| TREE NUTS | 2 | 1 |
| TURKEYS AND TURKEY EGGS | 1 | 0 |
| VEGETABLES AND MELONS | 1 | 1 |
| TOTAL | 51 | 42 |

**Exhibit E.22**
**Measures by SIC Description**

| MDSS SIC DESCRIPTION | MDSS Population Measures | On Site Audit Measures |
|---|---|---|
| ANIMAL SPECIALITIES, NEC | 1 | 1 |
| BROILER, FRYER, AND ROASTER CHICKENS | 6 | 6 |
| CHICKEN EGGS | 1 | 0 |
| CROP PREPARATION SERVICES FOR | 12 | 11 |
| DAIRY FARMS | 6 | 5 |
| DECIDUOUS TREE FRUITS | 1 | 0 |
| FOOD CROPS GROWN UNDER COVER | 3 | 3 |
| FOREST PRODUCTS | 1 | 1 |
| FORESTRY SERVICES | 2 | 2 |
| FRUITS AND TREE NUTS, NEC | 1 | 1 |
| GENERAL FARMS, PRIMARILY CROP | 5 | 4 |
| GRAPES | 7 | 6 |
| IRRIGATION SYSTEMS | 1 | 1 |
| ORNAMENTAL NURSERY PRODUCTS | 12 | 7 |
| POULTRY AND EGGS | 1 | 1 |
| REFRIGERATED WAREHOUSING AND | 3 | 3 |
| TREE NUTS | 5 | 1 |
| TURKEYS AND TURKEY EGGS | 1 | 0 |
| VEGETABLES AND MELONS | 1 | 1 |
| TOTAL | 70 | 54 |

Although the measures rebated covered many PG&E measure codes, they could basically be placed into four groups (compact fluorescent, T-8 fluorescent, high intensity discharge, and other). Exhibit E.23 shows which measures were covered by the on-site audits and Exhibit E.24 shows the audited number of paid units by fixture type.

**Exhibit E.23**
**Audited Sites by Lighting Group**

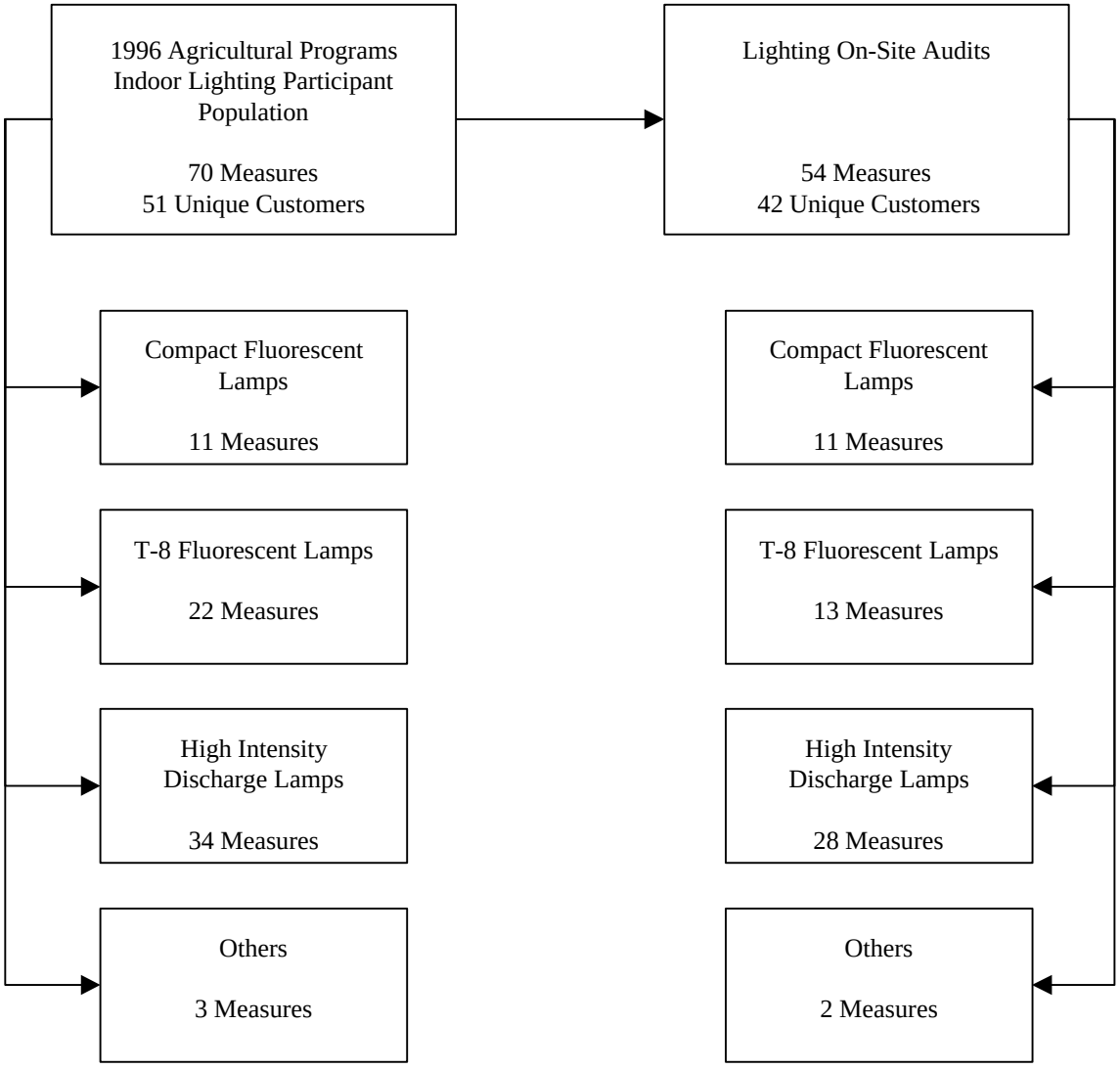



**Exhibit E.24**
**Audited Units by Fixture Type**

| Fixture Type | # of Units Paid | # of Units Audited |
|---|---|---|
| **CFL** | 2,743 | 2,638 |
| **T8** | 2,185 | 1,133 |
| **HID** | 1,247 | 1,212 |
| **Other** | 56 | 12 |
| **Total** | 6,231 | 4,995 |

**Exhibit E.25**
**Indoor Lighting Annual Hours of Operation Algorithm**

$$\text{Annual Hours of Operation} = \sum_{s=1}^{3} [\text{Open Hours}_s * \text{OF}_{\text{open, s}} + \text{Closed Hours}_s * \text{OF}_{\text{closed, s}}]$$

Where

$\text{Open Hours}_s$ = Schedule Group Annual Hours Open

$\text{OF}_{\text{open,s}}$ = Open Operating Factor for Schedule Group, s

$\text{Closed Hours}_s$ = Schedule Group Annual Hours Closed

$\text{Of}_{\text{closed,s}}$ = Closed Operating Factor for Schedule Group, s

During the audit, the majority of lights within the audited group were found to be either 100% on or off, based on their schedule. The open operating factor was 0.96 and the closed operating factor was 0.04. Each group of lights had their own annual hours of operation applied to all fixture types within the group. The total annual hours of operation were less than the ex ante estimate of 4,000 hours. Exhibit E.25 shows the operating hours by fixture type with the average operating hours weighted by number of units paid.

**Exhibit E.26**
**Annual Hours of Operation by Fixture Type**

| Fixture Type | Annual Hours of Operation |
|---|---|
| CFL | 2,301 |
| T8 | 2,313 |
| HID | 2,245 |
| Other | 5,811 |
| Weighted Average | 2,299 |

The energy impact used the annual hours of operation for each fixture type by SIC code designation, the change in technology wattage, and the number of paid fixtures as shown below in Exhibit E.27. The demand algorithm is shown in Exhibit E.28.

**Exhibit E.27**
**Indoor Lighting Engineering Algorithm**

$$kWh_{impact} = \sum_{sic=1}^{18} \left\{ \sum_{t=1}^{6} \Delta UOL_{t,\,sic} * \#\ of\ Paid\ Units_{t,\,sic} * Annual\ Hours\ of\ Operation_{t,\,sic} \right\}$$

Where

$UOL_{t,sic}$ = Change in connected load for technology, t

$Paid\ Units_{t,sic}$ = Units paid under the program for technology, t

Annual Hrs of Operation from Exhibit E.25

**Exhibit E.28**
**Indoor Lighting Engineering Demand Algorithm**

$$kW_{impact} = \sum_{sic=1}^{18} \left[ \sum_{t=1}^{6} \Delta UOL_{t,\,sic} \right] * OF_{open,\,p}$$

Where

$UOL_{t,sic}$ = Change in connected load for technology, t within the SIC designation

$OF_{open,,p}$ = Open Operating Factor at time of peak, p

The peak operating factor for the hours between 3 PM and 4 PM was 0.47. This was less than the ex ante peak operating factor of 0.67.
The change in connected load for each technology is applied in both the energy and demand impact analysis. This variable uses the data collected from the audit for both pre- and post-retrofit fixture wattage. Within the agricultural sector, the pre-wattages were different than expected, particularly for the high intensity discharge (HID) fixtures. This will be discussed separately.

*HID*

Buildings of Uniform Building Code groups I and U do not have the California Energy Standards applied to them.[1] Agricultural buildings (UBC group U), therefore, do not have to follow any set pattern for lighting their buildings. The ex ante assumptions are based on commercial and industrial buildings with energy standards applied to maintain a specified lumens and watts per square foot. For the audited growers this often resulted in replacement of 60 to 100 watt incandescent lights with new 400 watt HID fixtures. Anecdotal evidence based on conversations by the auditor with the owners indicated that they were all quite happy with the level of light now within their buildings.
One of these sites installed all new lighting into an existing building that previously had no lights and another site built a larger building in which the new lights were installed and one site installed lighting into a renovated building. Using the screening for possible rebate measure

[1] Nonresidential Manual, California Energy Commission, Effective July 1995 and Updated March 1996, p. 2-2.

influence on output[2], these sites were considered new and the measure was assumed to fit into the 'did not cause the change' bin. Within this bin, the gross savings are defined to be: "(Consumption of the affected systems in the post-installation conditions at the observed post-installation output level) minus (consumption that would have occurred if the unimproved system had been used to achieve the same level of output)." Since there was no way the old system could have been used to achieve the same level of output without actual installation of more lights, the impact was set to zero for these two sites. Both growers at these two sites were contacted to query about why they installed HID fixtures rather than other possible technologies. One stated "After looking at both mercury vapor and incandescent fixtures, we decided that HIDs provided the best light wavelength for our crop." The other stated "I looked at similar fixtures at neighbors buildings and liked the HID fixtures the best. Plus they seemed to be the most energy efficient."

While many growers were thinking that more light within their buildings would be nice, it was the program incentive which appeared to cause them to act and purchase the additional wattage fixtures. Therefore, the increase in load seen by many with HID fixtures installed was considered to be caused by the program and applied as a negative impact. Although some of the fixtures were installed on a one-for-one change out, others installed fewer HID fixtures than the lower wattage fixtures which had been in previously. This was accounted for in the average change in connected load variable applied to each fixture.

There was only one SIC designation without HID audits performed. The HID per fixture impact for this group was 'borrowed' from a similar SIC code designation (deciduous tree fruit SIC code used the same per fixture impact as the tree nuts SIC code). Other than this one group, each HID group used the information gathered during the on-site audits to determine the program level impacts.

*Other Measures*

The compact fluorescent lamps (CFL) technology was generally applied as expected. Lower wattage CFLs took the place of higher wattage incandescent lamps. The audits covered 2,638 of the 2,743 lamps paid under the program and all groups used the information gathered during the audits to determine the program level impacts.

The T-8 fixtures had the fewest actual units audited (1,133 of the 2,185 paid units). The technology was spread out across many SIC description types. Because of these issues, the ex ante energy and demand impacts were used when the site was not audited.

There were three technologies within the 'Other' grouping – exit signs, delamping, and lighting controls. The delamping site was not visited and the ex ante energy and demand impacts were applied to this measure. The exit signs and lighting controls were audited. The exit signs were given the ex ante energy and demand impacts since no previous wattage could be determined. The lighting controls were not being used. The lights that should have been controlled were remaining on. This measure had zero impacts applied.

*Productivity Changes*

The on-site audit collected information from the growers to determine if there were any productivity changes due to an increase in wattage. Twelve audits indicated that there was an increase in productivity due to the increased wattage. Exhibit E.29 shows the product and stated

[2] Agenda Supplement for December 12, 1997 Meeting of CADMAC Modeling and Base Efficiency Subcommittees.

increase in production gathered during the audit. The last two columns indicate if the stated increase in productivity was taken into account within the analysis. For the two sites where it was, the impact was set to zero. Sites that stated they would not have increased their lighting hours with the old lights were not given any productivity increase since the old system would not have been used to achieve the same output as the new system.

**Exhibit E.29**
**Productivity Changes**

| Audit | Product | Replacement wattage compared to previous wattage | Why increased wattage? | Production Increased? | How Much | Increased hours/day use | Productivity Taken Into Account? | Accounting for Productivity Reason |
|---|---|---|---|---|---|---|---|---|
| 101 | Grows Roses | Higher | Because of rebate program | Yes | 10% | 0 | No | Assume that plants now have more buds per plant, which could not have gotten with old lights |
| 111 | Farm Workshop | Higher | Because of rebate program | Yes | 60% | 0 | No | No quantifiable output |
| 113 | Growing seed potatoes | Higher | Because of rebate program | Yes | 5% | 0 | No | Stated that lights don't speed up production, but have healthier plants. Old lights not used for growing. |
| 114 | Storage and packing lines | Same | Because of rebate program | Yes | 7.5% | 0 | | Can't do this since don't know old wattage |
| 118 | Packing Line | Higher | Before the rebate program | Yes | 5% | 0 | No | Stated that lights provide better light and can select better quality fruit for packing |
| 122 | Growing plants | New | Both before and because of the program | Yes | 20% | 0 | Yes | New lights, meets "did not cause change" criteria, conversation with owner states considered mercury vapor and incandescent, but HID's provided the best wavelength for the plants |
| 124 | Packing Shed | Higher | Before the rebate program | Yes | 5% | 3 | No | No quantifiable output, stated would not have increased lighting hours with old lights |
| 130 | Barn for feeding cows | Higher | Before the rebate program | Yes | 24% | 0 | Yes | New barn, meets "did not cause change" criteria, conversation with owner said would have put these in anyway, did not look at other lights |
| 135 | Offices and growing | New | Before the rebate program | | | | Yes | New lights in new building, meets "did not cause change" criteria, no other types of fixtures considered |
| 137 | Growing plants | Higher | Because of rebate program | Yes | 10% | 0 | No | Stated that would not have changed lighting hours with old lights |
| 138 | Growing plants | Higher | Because of rebate program | Yes | 15% | 0 | No | Stated that would not have changed lighting hours with old lights |
| 152 | Growing plants | Higher | Because of rebate program | Yes | 15% | 0 | No | Stated that would not have changed lighting hours with old lights |

The population impacts are shown below in Exhibit E.30.

**Exhibit E.30**
**Lighting End Use – Program Impacts**

| | kWh | kW |
|---|---|---|
| **Ex Ante Impact** | 3,640,704 | 609 |
| **Ex Post Impact** | (38,928) | (32) |
| **Gross Realization Rate** | (0.01) | (0.05) |

The details of the analysis are shown at the end of this appendix in Exhibit E.35 – Indoor Lighting Analysis.

### *Energy Management Services*

The AEMS analysis covered only those customers with a pump test. The site surveys were not analyzed within this evaluation. Past experience with evaluation of the Agricultural sector indicated that, on the phone, the grower had great difficulty zeroing in about which actual pump the surveyor was questioning them. Therefore, the plan did not narrow the questions to a specific pump, but kept to a specific business. This entailed some data cleaning on the PG&E pump test database since business names are not exactly the same. All 9,689 Agricultural sector pump test records were cleaned based on the business name and the business address. Often multiple corporations with similar names had the same address. Once cleaned, there were 1,446 businesses within the 1995/96 pump test database with pump tests in 1996. Since the telephone

survey spoke with the one person responsible for all pumps across the corporation, any businesses with the same address was cleaned to refer to one business.
The AEMS estimate of gross savings was based on the 350 participant telephone surveys, information from the PG&E pump test database, and the pump repair OPE ratio. The engineering algorithm used to determine savings is shown in Exhibit E.31.

**Exhibit E.31**
**AEMS Engineering Algorithm**

kWh Impact = Participant Business Population * Percent of Pumps Repaired per Business * Average kWh Use * OPE Ratio

The detailed values are shown at the end of this appendix Exhibit E.36 – AEMS Analysis. There were no kW savings applied based on the analysis of pump repair within the AEEI analysis. Exhibit E.32 shows the impacts for the AEMS program.

**Exhibit E.32**
**AEMS Program Impacts**

| | kWh | kW |
|---|---|---|
| **Ex Ante Estimate** | 21,432,296 | 6,032 |
| **Ex Post-Estimate** | 7,172,261 | 0 |
| **Gross Realization Rate** | 0.33 | 0 |

This completes the write up of the engineering technical appendix. The total program impacts are shown in the report. Following are the detailed pages from the LPSN, micro, indoor lighting and AEMS engineering analyses.

# Appendix F - Final On-site Instrument

The final on-site instruments are available only in the hardcopy version of this report.

# Appendix G - Costing Period Allocation Table

***Gross Demand and Energy Savings by Costing Period***
***For the AEEI Program – Pumping End Use***

| | Pumping End Use | | | |
|---|---|---|---|---|
| **PG&E Cost Period** | **Program kW Savings Coincident with System Max in Period** | **kW H-Factor** | **kWh Savings** | **kWh H-Factor** |
| **Summer On-Peak:**<br>**May 1 to Oct 31**<br>**12:00 - 6:00 PM**<br>**Weekdays** | 803.9 | 1.00 | 636,482 | 0.13 |
| **Summer Partial-Peak:**<br>**May 1 to Oct 31**<br>**8:30 AM - 12:00 PM**<br>**6:00 PM - 9:30 PM**<br>**Weekdays** | 820.0 | 1.02 | 783,363 | 0.16 |
| **Summer Off-Peak:**<br>**May 1 to Oct 31**<br>**Other** | 956.6 | 1.19 | 2,154,248 | 0.44 |
| **Winter Partial-Peak:**<br>**Nov 1 to April 31**<br>**8:30 AM - 9:30 PM**<br>**Weekdays** | 321.6 | 0.40 | 538,562 | 0.11 |
| **Winter Off-Peak:**<br>**Nov 1 to April 31**<br>**Other** | 184.9 | 0.23 | 734,403 | 0.15 |

***Gross Demand and Energy Savings by Costing Period***
***For the AEEI Program – Indoor Lighting End Use***

| | Indoor Lighting End Use | | | |
|---|---|---|---|---|
| **PG&E Cost Period** | **Program kW Savings Coincident with System Max in Period** | **kW H-Factor** | **kWh Savings** | **kWh H-Factor** |
| **Summer On-Peak:**<br>**May 1 to Oct 31**<br>**12:00 - 6:00 PM**<br>**Weekdays** | -31.6 | 1.00 | -5,839 | 0.15 |
| **Summer Partial-Peak:**<br>**May 1 to Oct 31**<br>**8:30 AM - 12:00 PM**<br>**6:00 PM - 9:30 PM**<br>**Weekdays** | -29.4 | 0.93 | -6,229 | 0.16 |
| **Summer Off-Peak:**<br>**May 1 to Oct 31**<br>**Other** | -27.5 | 0.87 | -14,403 | 0.37 |
| **Winter Partial-Peak:**<br>**Nov 1 to April 31**<br>**8:30 AM - 9:30 PM**<br>**Weekdays** | -12.7 | 0.40 | -6,229 | 0.16 |
| **Winter Off-Peak:**<br>**Nov 1 to April 31**<br>**Other** | -14.9 | 0.47 | -6,618 | 0.17 |

## *Gross Demand and Energy Savings by Costing Period For the AEMS Program*

| | AEMS Program | | | |
|---|---|---|---|---|
| **PG&E Cost Period** | **Program kW Savings Coincident with System Max in Period** | **kW H-Factor** | **kWh Savings** | **kWh H-Factor** |
| **Summer On-Peak: May 1 to Oct 31 12:00 - 6:00 PM Weekdays** | 0.0 | 1.00 | 932,394 | 0.13 |
| **Summer Partial-Peak: May 1 to Oct 31 8:30 AM - 12:00 PM 6:00 PM - 9:30 PM Weekdays** | 0.0 | 1.17 | 1,147,562 | 0.16 |
| **Summer Off-Peak: May 1 to Oct 31 Other** | 0.0 | 1.09 | 3,012,350 | 0.42 |
| **Winter Partial-Peak: Nov 1 to April 31 8:30 AM - 9:30 PM Weekdays** | 0.0 | 0.81 | 860,671 | 0.12 |
| **Winter Off-Peak: Nov 1 to April 31 Other** | 0.0 | 0.79 | 1,219,284 | 0.17 |

# Appendix H - Pump Test Data Summaries

***Appendix H***
***Pump Test Data Summary***

*Pump Tests*

| Record Number | Participant Type | On-site Audit ID | Date of Test | Number of Flow Points in Test | Normal Flow Point | Meter Number | Kh | Meter Multiplier | Nameplate HP | Type of Pump | Standing Water Level | Correction To Gauge | PipeID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Participant | 202 | 11-Sep-97 | 1 | 1 | R03115 | 28.8 | 1 | 30 | Turbine, Well | 11.95 | 0 | 6.375 |
| 2 | Participant | 203 | 17-Sep-97 | 1 | 1 | 0128R5 | 4.8 | 40 | 250 | Turbine, Well | 392 | 0 | 10.25 |
| 3 | Participant | 205 | 07-Aug-97 | 1 | 1 | R54388 | 28.8 | 1 | 20 | Turbine, Well | 11.55 | 2 | 6.375 |
| 4 | Participant | 206 | 07-Aug-97 | 1 | 1 | R36890 | 4.8 | 40 | 40 | Turbine, Well | | 0 | 8.375 |
| 5 | Participant | 207 | 11-Sep-97 | 3 | 3 | 05R043 | 43.2 | 1 | 60 | Turbine, Well | 83 | 0 | 10.125 |
| 6 | Participant | 208 | 22-Aug-97 | 1 | 1 | 4419R4 | 21.6 | 1 | 40 | Centrifugal, Booster | | 0 | 10 |
| 7 | Participant | 209 | 21-Aug-97 | 1 | 1 | R29607 | 57.6 | 1 | 40 | Turbine, Well | 36 | 0 | 6 |
| 8 | Participant | 212 | 22-Aug-97 | 1 | 1 | 2732R5 | 21.6 | 1 | 50 | Submersible | | 0 | 4 |
| 9 | Participant | 213 | 21-Aug-97 | 3 | 3 | 86R332 | 3.6 | 40 | 125 | Submersible | 278 | 0 | 8 |
| 10 | Participant | 216 | 11-Sep-97 | 3 | 3 | R08400 | 57.6 | 1 | 30 | Turbine, Well | | 0 | 8.25 |
| 11 | Participant | 221 | 18-Sep-97 | 1 | 1 | 0507R2 | 21.6 | 1 | 30 | Turbine, Well | 81 | 0 | 7.625 |
| 12 | Participant | 222 | 18-Sep-97 | 1 | 1 | R70858 | 57.6 | 1 | 30 | Turbine, Well | 77 | 0 | 8.125 |
| 13 | Participant | 229 | 07-Aug-97 | 1 | 1 | 41437T | 4.8 | 40 | 100 | Turbine, Well | | 0 | 10.375 |
| 14 | Participant | 230 | 07-Aug-97 | 1 | 1 | 227R38 | 4.8 | 40 | 125 | Turbine, Well | | 0 | 10.375 |
| 15 | Participant | 231 | 02-Sep-97 | 4 | 1 | R04178 | 4.8 | 40 | 150 | Turbine, Well | 198 | 0 | 12.25 |
| 16 | Participant | 232 | 10-Sep-97 | 3 | 1 | 6672R2 | 1.8 | 1200 | 200 | Axial/Propeller | | 0 | 35.375 |

## *Appendix H*
## *Pump Test Data Summary*

*Pump Tests*

| Record Number | Participant Type | On-site Audit ID | Date of Test | Number of Flow Points in Test | Normal Flow Point | Meter Number | Kh | Meter Multiplier | Nameplate HP | Type of Pump | Standing Water Level | Correction To Gauge | PipeID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | Participant | 233 | 10-Sep-97 | 3 | 1 | 6672R2 | 1.8 | 1200 | 300 | Axial/Propeller | | 0 | 29.375 |
| 18 | Participant | 235 | 08-Aug-97 | 3 | 3 | R37245 | 4.8 | 40 | 75 | Turbine, Well | 145.8 | 0.5 | 8 |
| 19 | Participant | 236 | 08-Aug-97 | 3 | 3 | 5390R3 | 21.6 | 1 | 15 | Axial/Propeller | 118 | 3.5 | 4 |
| 20 | Participant | 237 | 07-Aug-97 | 1 | 1 | R70159 | 57.6 | 1 | 75 | Turbine, Well | 83 | 0 | 10.125 |
| 21 | Participant | 238 | 19-Aug-97 | 4 | 1 | 7868R5 | 1.2 | 1200 | 300 | Turbine, Booster | 5.9 | 0 | 12.25 |
| 22 | Participant | 240 | 07-Aug-97 | 1 | 1 | 5187R4 | 21.6 | 1 | 25 | Axial/Propeller | | 0 | 15.5 |
| 23 | Participant | 241 | 02-Sep-97 | 1 | 1 | R72218 | 4.8 | 40 | 150 | Turbine, Well | | 0 | 10.25 |
| 24 | Participant | 242.1 | 19-Aug-97 | 3 | 1 | 502R59 | 4.8 | 40 | 75 | Turbine, Booster | | 0 | 12.25 |
| 25 | Participant | 242.2 | 19-Aug-97 | 3 | 3 | 502R59 | 4.8 | 40 | 60 | Turbine, Booster | | 0 | 12.25 |
| 26 | Participant | 243 | 19-Aug-97 | 3 | 1 | 219R47 | 4.8 | 120 | 150 | Turbine, Booster | 4.4 | 0 | 0 |
| 27 | Participant | 244 | 19-Aug-97 | 3 | 1 | 1721R6 | 1.2 | 120 | 75 | Turbine, Booster | 7.9 | 0 | 0 |
| 28 | Participant | 245.1 | 18-Aug-97 | 4 | 1 | 5438R5 | 4.8 | 40 | 15 | Turbine, Booster | | 3 | 6.125 |
| 29 | Participant | 245.2 | 18-Aug-97 | 3 | 1 | 5438R5 | 4.8 | 40 | 10 | Turbine, Booster | | 0 | 6.125 |
| 30 | Participant | 247 | 18-Aug-97 | 4 | 1 | R05228 | 57.6 | 1 | 20 | Turbine, Booster | | 2 | 6.125 |

## *Pump Tests*

| Record Number | Participant Type | On-site Audit ID | Date of Test | Number of Flow Points in Test | Normal Flow Point | Meter Number | Kh | Meter Multiplier | Nameplate HP | Type of Pump | Standing Water Level | Correction To Gauge | PipeID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | Participant | 248.1 | 19-Aug-97 | 3 | 1 | R54897 | 57.6 | 1 | 20 | Centrifugal, Booster | | 0 | 6.125 |
| 32 | Participant | 248.2 | 18-Aug-97 | 1 | 1 | R54897 | 57.6 | 1 | 50 | Centrifugal, Booster | | 1 | 8.125 |
| 33 | Participant | 250 | 05-Aug-97 | 2 | 1 | 2T1777 | 4.8 | 40 | 100 | Turbine, Well | | 6 | 9.5 |
| 34 | Participant | 252 | 19-Sep-97 | 1 | 1 | 2632R8 | 4.8 | 120 | 125 | Axial/Propeller | 15.9 | 0 | 30 |
| 35 | Participant | 255 | 19-Sep-97 | 1 | 1 | 2632R8 | 1.2 | 400 | 200 | Axial/Propeller | 15.9 | 0 | 41 |
| 36 | Participant | 257.1 | 19-Aug-97 | 4 | 1 | 60r157 | 3.6 | 40 | 50 | Turbine, Booster | | 1 | 10.125 |
| 37 | Participant | 257.2 | 19-Aug-97 | 4 | 1 | 60R157 | 3.6 | 40 | 30 | Turbine, Booster | | 0 | 10.25 |
| 38 | Participant | 257.3 | 19-Aug-97 | 4 | 1 | 60R157 | 3.6 | 40 | 50 | Turbine, Booster | | 0 | 10.25 |
| 39 | Participant | 258.1 | 19-Aug-97 | 4 | 1 | 84R417 | 3.6 | 40 | 50 | Turbine, Booster | | 0 | 12.25 |
| 40 | Participant | 258.2 | 19-Aug-97 | 4 | 1 | 84R417 | 3.6 | 40 | 30 | Turbine, Booster | | 0 | 12.25 |
| 41 | Participant | 258.3 | 19-Aug-97 | 4 | 1 | 84R417 | 3.6 | 40 | 50 | Turbine, Booster | | 0 | 12.25 |
| 42 | Participant | 259.1 | 20-Aug-97 | 4 | 1 | 1016R6 | 3.6 | 40 | 50 | Turbine, Booster | | 0 | 10.25 |
| 43 | Participant | 259.2 | 20-Aug-97 | 4 | 1 | 1016R6 | 3.6 | 40 | 60 | Turbine, Booster | | 0 | 10.25 |
| 44 | Participant | 260.1 | 20-Aug-97 | 4 | 1 | 91342T | 57.6 | 1 | 50 | Turbine, Booster | | 0 | 12.25 |
| 45 | Participant | 260.2 | 20-Aug-97 | 5 | 1 | 91342T | 57.6 | 1 | 30 | Turbine, Booster | | 0 | 12.25 |

## *Appendix H*
## *Pump Test Data Summary*

*Pump Tests*

| Record Number | Participant Type | On-site Audit ID | Date of Test | Number of Flow Points in Test | Normal Flow Point | Meter Number | Kh | Meter Multiplier | Nameplate HP | Type of Pump | Standing Water Level | Correction To Gauge | PipeID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | Participant | 262 | 11-Aug-97 | 3 | 3 | 4381R0 | 21.6 | 1 | 30 | Turbine, Well | | 0 | 10.25 |
| 47 | Participant | 263 | 02-Sep-97 | 3 | 1 | 052R28 | 4.8 | 80 | 250 | Turbine, Well | 267 | 0 | 10.25 |
| 48 | Participant | 265 | 19-Sep-97 | 1 | 1 | 9622T9 | 4.8 | 120 | 350 | Axial/Propeller | | 0 | 47 |
| 49 | Participant | 268 | 02-Sep-97 | 1 | 1 | R29234 | 4.8 | 40 | 125 | Turbine, Well | 235 | 0 | 10.25 |
| 50 | Participant | 270 | 30-Sep-97 | 1 | 1 | 6672R0 | 57.6 | 10 | 2000 | Axial/Propeller | | 0 | 0 |
| 51 | Participant | 271 | 30-Sep-97 | 1 | 1 | 2633R2 | 1.2 | 2400 | 600 | Axial/Propeller | | 0 | 0 |
| 52 | Participant | 273 | 08-Aug-97 | 1 | 1 | 42577T | 4.8 | 40 | 30 | Axial/Propeller | | 2 | 17.5 |
| 53 | Participant | 275 | 08-Aug-97 | 3 | 3 | R36571 | 28.8 | 1 | 25 | Turbine, Well | 141 | 1 | 6.125 |
| 54 | Participant | 276 | 22-Aug-97 | 3 | 3 | 99R269 | 57.6 | 1 | 50 | Centrifugal, Booster | | 1 | 4 |
| 55 | Participant | 280 | 12-Aug-97 | 1 | 1 | 60R689 | 57.6 | 1 | 100 | Turbine, Well | 214 | 0 | 10.25 |
| 56 | Participant | 282 | 04-Sep-97 | 1 | 1 | 14R619 | 57.6 | 1 | 60 | Turbine, Well | 115 | 0 | 10.375 |
| 57 | Participant | 283 | 10-Sep-97 | 3 | 1 | R36934 | 4.8 | 40 | 30 | Turbine, Well | 0.95 | 0 | 6.125 |
| 58 | Participant | 287 | 10-Sep-97 | 3 | 2 | 3923R2 | 21.6 | 1 | 50 | Centrifugal, Booster | | 0 | 6.25 |
| 59 | Participant | 288 | 24-Sep-97 | 3 | 1 | 42580T | 4.8 | 40 | 150 | Turbine, Well | | 0 | 10.25 |
| 60 | Participant | 289 | 04-Sep-97 | 3 | 3 | R49316 | 57.6 | 1 | 25 | Submersible | 88 | 0.5 | 4 |

*Pump Tests*

| Record Number | Participant Type | On-site Audit ID | Date of Test | Number of Flow Points in Test | Normal Flow Point | Meter Number | Kh | Meter Multiplier | Nameplate HP | Type of Pump | Standing Water Level | Correction To Gauge | PipeID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | Participant | 290 | 14-Jul-97 | 3 | 1 | R94447 | 4.8 | 40 | 125 | Turbine, Well | | 1 | 10.25 |
| 62 | Participant | 291 | 29-Jul-97 | 3 | 1 | 4222R3 | 4.8 | 40 | 75 | Turbine, Well | 142 | 1 | 10 |
| 63 | Participant | 292 | 18-Sep-97 | 4 | 1 | 98R837 | 4.8 | 40 | 100 | Turbine, Well | | 0 | 10.25 |
| 64 | Participant | 293 | 03-Sep-97 | 4 | 1 | 42595T | 4.8 | 80 | 150 | Turbine, Well | 271 | 0 | 8.125 |
| 65 | Participant | 297 | 20-Aug-97 | 1 | 1 | 092R54 | 4.8 | 120 | 200 | Turbine, Well | 378 | 0 | 10.25 |
| 66 | Participant | 301 | 07-Aug-97 | 1 | 1 | R79186 | 57.6 | 1 | 25 | Turbine, Booster | 4.9 | 0 | 11.5 |
| 67 | Nonparticipant | 305 | 30-Sep-97 | 1 | 1 | 172819 | 14.4 | 1 | 10 | Submersible | 26 | 1 | 3 |
| 68 | Nonparticipant | 319 | 12-Aug-97 | 1 | 1 | 90637T | 57.6 | 1 | 75 | Turbine, Booster | | 0 | 10.25 |
| 69 | Nonparticipant | 320 | 29-Aug-97 | 3 | 1 | R67694 | 28.8 | 1 | 15 | Turbine, Well | 137.5 | 0 | 6.125 |
| 70 | Nonparticipant | 328 | 29-Aug-97 | 4 | 1 | R44643 | 28.8 | 1 | 25 | Turbine, Well | | 0 | 8.625 |
| 71 | Nonparticipant | 329 | 12-Aug-97 | 3 | 1 | 6874R1 | 57.6 | 1 | 75 | Turbine, Well | 74 | 0 | 10.25 |

## *Pump Tests*

| Record Number | Participant Type | On-site Audit ID | Date of Test | Number of Flow Points in Test | Normal Flow Point | Meter Number | Kh | Meter Multiplier | Nameplate HP | Type of Pump | Standing Water Level | Correction To Gauge | PipeID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 72 | Nonparticipant | 335 | 20-Aug-97 | 4 | 1 | R06206 | 57.6 | 1 | 60 | Turbine, Well | 108.5 | 0 | 6.125 |
| 73 | Nonparticipant | 338 | 21-Aug-97 | 3 | 3 | 81R922 | 3.6 | 40 | 125 | Turbine, Well | 59 | 2 | 10.25 |
| 74 | Nonparticipant | 341 | 10-Sep-97 | 4 | 4 | R36159 | 28.8 | 1 | 15 | Submersible | 276 | 0.5 | 4 |
| 75 | Nonparticipant | 347 | 21-Aug-97 | 1 | 1 | 45R610 | 57.6 | 1 | 40 | Turbine, Well | 204 | 0 | 6.125 |
| 76 | Nonparticipant | 349 | 21-Aug-97 | 3 | 3 | R04477 | 4.8 | 40 | 60 | Turbine, Well | 88 | 1.5 | 10 |
| 77 | Nonparticipant | 350 | 22-Aug-97 | 2 | 2 | 15R955 | 28.8 | 1 | 15 | Submersible | 195 | 0 | 2.75 |
| 78 | Nonparticipant | 357 | 18-Sep-97 | 1 | 1 | R93213 | 28.8 | 1 | 15 | Turbine, Well | 54 | 0 | 6.0625 |
| 79 | Nonparticipant | 362.1 | 19-Sep-97 | 1 | 1 | 21846T | 4.8 | 120 | 50 | Axial/Propeller | | 0 | 0 |
| 80 | Nonparticipant | 362.2 | 19-Sep-97 | 1 | 1 | 21846T | 4.8 | 120 | 150 | Axial/Propeller | | 0 | 0 |
| 81 | Nonparticipant | 362.3 | 19-Sep-97 | 1 | 1 | 21846T | 4.8 | 120 | 100 | Axial/Propeller | | 0 | 0 |
| 82 | Nonparticipant | 362.4 | 19-Sep-97 | 1 | 1 | 21846T | 4.8 | 120 | 100 | Axial/Propeller | | 0 | 0 |
| 83 | Nonparticipant | 366 | 04-Sep-97 | 1 | 1 | 345R54 | 43.2 | 1 | 40 | Turbine, Well | 139 | 0 | 7.75 |
| 84 | Nonparticipant | 375 | 04-Sep-97 | 1 | 1 | 85794T | 28.8 | 1 | 7.5 | Submersible | | 0 | 2.5 |
| 85 | Nonparticipant | 377 | 05-Sep-97 | 1 | 1 | 20R500 | 57.6 | 1 | 50 | Turbine, Well | | 0 | 17 |
| 86 | Nonparticipant | 381 | 05-Sep-97 | 1 | 1 | 57641T | 57.6 | 1 | 20 | Turbine, Well | | 0 | 18 |
| 87 | Nonparticipant | 383 | 04-Sep-97 | 1 | 1 | R72530 | 57.6 | 1 | 75 | Turbine, Well | 129 | 4 | 7.75 |
| 88 | Nonparticipant | 389 | 10-Sep-97 | 4 | 1 | R44969 | 4.8 | 40 | 50 | Turbine, Well | 156.5 | 4 | 6.125 |
| 89 | Nonparticipant | 394 | 11-Sep-97 | 1 | 1 | 098R70 | 3.6 | 40 | 200 | Turbine, Well | 95.21 | 0 | 10.375 |
| 90 | Nonparticipant | 395 | 22-Aug-97 | 2 | 1 | R39785 | 57.6 | 1 | 40 | Turbine, Well | 88.3 | 0 | 10 |
| 91 | Nonparticipant | 396 | 20-Aug-97 | 1 | 1 | 8080T1 | 57.6 | 1 | 40 | Turbine, Well | 137 | 0 | 8.125 |

## *Appendix H*
## *Pump Test Data Summary*

*Pump Tests*

| Record Number | Participant Type | On-site Audit ID | Date of Test | Number of Flow Points in Test | Normal Flow Point | Meter Number | Kh | Meter Multiplier | Nameplate HP | Type of Pump | Standing Water Level | Correction To Gauge | PipeID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 92 | Nonparticipant | 397 | 20-Aug-97 | 1 | 1 | 54R887 | 57.6 | 1 | 75 | Turbine, Well | 176 | 0 | 8.125 |
| 93 | Nonparticipant | 399 | 05-Sep-97 | 2 | 1 | 855R53 | 43.2 | 1 | 40 | Turbine, Well | 33 | 0.5 | 5.75 |
| 94 | Nonparticipant | 400 | 05-Sep-97 | 1 | 1 | 5153R7 | 57.6 | 1 | 50 | Turbine, Well | | 4 | 7.75 |
| 95 | Nonparticipant | 401 | 04-Sep-97 | 1 | 1 | R50068 | 28.8 | 1 | 7.5 | Submersible | 100 | 0 | 3 |
| 96 | Nonparticipant | 402 | 09-Sep-97 | 1 | 1 | R38902 | 28.8 | 1 | 20 | Turbine, Well | 63 | 0 | 6 |
| 97 | Nonparticipant | 403 | 09-Sep-97 | 3 | 1 | R98321 | 57.6 | 1 | 30 | Turbine, Well | 37.5 | 0 | 8.125 |
| 98 | Nonparticipant | 404 | 25-Sep-97 | 4 | 1 | 217R96 | 43.2 | 1 | 30 | Turbine, Well | 67 | 0 | 8.625 |
| 99 | Nonparticipant | 405 | 09-Sep-97 | 1 | 1 | R70052 | 57.6 | 1 | 30 | Turbine, Well | 29.5 | 0 | 8.5625 |
| 100 | Nonparticipant | 406 | 08-Oct-97 | 1 | 1 | 322R48 | 43.2 | 1 | 125 | Turbine, Well | 131 | 0 | 10.625 |
| 101 | Nonparticipant | 408 | 03-Sep-97 | 1 | 1 | R11171 | 57.6 | 1 | 30 | Submersible | 140 | 0 | 4 |
| 102 | Nonparticipant | 409 | 08-Oct-97 | 1 | 1 | 5382R1 | 21.6 | 1 | 15 | Turbine, Well | 0 | 0 | 8.125 |
| 103 | Nonparticipant | 410 | 10-Sep-97 | 1 | 1 | 602R86 | 43.2 | 1 | 75 | Turbine, Well | 109.6 | 0 | 10.25 |
| 104 | Nonparticipant | 411 | 09-Sep-97 | 1 | 1 | R28100 | 28.8 | 1 | 10 | Submersible | 24 | 0 | 4 |
| 105 | Nonparticipant | 412 | 08-Oct-97 | 4 | 3 | 65361T | 28.8 | 1 | 7.5 | Submersible | 62 | 0 | 5.625 |
| 106 | Nonparticipant | 414 | 25-Sep-97 | 4 | 1 | R09668 | 28.8 | 1 | 10 | Submersible | 23 | 0 | 4 |
| 107 | Nonparticipant | 415 | 25-Sep-97 | 1 | 1 | 1704R5 | 21.6 | 1 | 75 | Turbine, Well | 72 | 0 | 10.25 |
| 108 | Nonparticipant | 416 | 25-Sep-97 | 1 | 1 | 24T518 | 57.6 | 1 | 40 | Turbine, Well | 80 | 0 | 8.125 |

## *Appendix H*
## *Pump Test Data Summary*

*Pump Tests*

| Record Number | Participant Type | On-site Audit ID | Date of Test | Number of Flow Points in Test | Normal Flow Point | Meter Number | Kh | Meter Multiplier | Nameplate HP | Type of Pump | Standing Water Level | Correction To Gauge | PipeID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 109 | Nonparticipant | 417 | 19-Sep-97 | 1 | 1 | 2852R0 | 28.8 | 1 | 7.5 | Turbine, Well | | 0 | 2.5 |
| 110 | Nonparticipant | 418 | 17-Sep-97 | 1 | 1 | 21716T | 4.8 | 40 | 15 | Axial/Propeller | | 0 | 12.125 |
| 111 | Nonparticipant | 420 | 23-Sep-97 | 3 | 3 | R12077 | 4.8 | 40 | 75 | Turbine, Well | 13 | 0 | 10.25 |
| 112 | Nonparticipant | 421 | 23-Sep-97 | 1 | 1 | 4221R3 | 4.8 | 40 | 75 | Turbine, Well | | 0 | 10.25 |
| 113 | Nonparticipant | 422 | 24-Sep-97 | 3 | 1 | 6434R9 | 21.6 | 1 | 50 | Turbine, Well | | 5 | 10.25 |
| 114 | Nonparticipant | 423 | 24-Sep-97 | 3 | 1 | 3516R9 | 21.6 | 1 | 50 | Turbine, Well | | 1 | 10.25 |
| 115 | Nonparticipant | 424 | 24-Sep-97 | 3 | 1 | 3526R6 | 21.6 | 1 | 50 | Turbine, Well | | 2 | 10.25 |
| 116 | Nonparticipant | 425 | 23-Sep-97 | 4 | 1 | 4262R3 | 57.6 | 1 | 50 | Turbine, Well | 90.8 | 0 | 6.125 |
| 117 | Nonparticipant | 426 | 23-Sep-97 | 1 | 1 | R72571 | 57.6 | 1 | 75 | Turbine, Well | 90.8 | 0 | 10.25 |
| 118 | Nonparticipant | 427 | 23-Sep-97 | 1 | 1 | 91412T | 4.8 | 40 | 150 | Turbine, Well | 344 | 0 | 10.25 |
| 119 | Nonparticipant | 429 | 24-Sep-97 | 3 | 1 | R28925 | 4.8 | 80 | 250 | Turbine, Well | 493 | 0 | 10.25 |
| 120 | Nonparticipant | 430 | 24-Sep-97 | 4 | 1 | R06136 | 57.6 | 1 | 50 | Submersible | 526 | 0 | 4 |
| 121 | Nonparticipant | 431 | 17-Sep-97 | 1 | 1 | 21716T | 4.8 | 40 | 15 | Axial/Propeller | | 0 | 12.125 |
| 122 | Nonparticipant | 432 | 17-Sep-97 | 1 | 1 | 52321T | 4.8 | 120 | 15 | Axial/Propeller | | 0 | 12 |
| 123 | Nonparticipant | 433 | 17-Sep-97 | 1 | 1 | 52321T | 4.8 | 120 | 15 | Axial/Propeller | | 0 | 12 |

## *Appendix H*
## *Pump Test Data Summary*

*Pump Tests*

| Record Number | Participant Type | On-site Audit ID | Date of Test | Number of Flow Points in Test | Normal Flow Point | Meter Number | Kh | Meter Multiplier | Nameplate HP | Type of Pump | Standing Water Level | Correction To Gauge | PipeID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 124 | Nonparticipant | 434 | 17-Sep-97 | 3 | 1 | R28928 | 4.8 | 120 | 100 | Turbine, Booster | | 0 | 12 |
| 125 | Nonparticipant | 435 | 23-Sep-97 | 3 | 1 | 52338T | 4.8 | 40 | 150 | Turbine, Well | 344 | 0 | 10.25 |
| 126 | Nonparticipant | 436 | 23-Sep-97 | 1 | 1 | 90602T | 4.8 | 40 | 150 | Turbine, Well | 344 | 0 | 10.25 |
| 127 | Nonparticipant | 437 | 01-Oct-97 | 1 | 1 | 5137R4 | 4.8 | 80 | 250 | Turbine, Well | 284 | 0 | 10 |
| 128 | Nonparticipant | 438 | 30-Sep-97 | 3 | 1 | R74565 | 4.8 | 40 | 200 | Turbine, Well | 266 | 0 | 10.25 |
| 129 | Nonparticipant | 439 | 30-Sep-97 | 1 | 1 | R36895 | 4.8 | 80 | 300 | Turbine, Well | 319 | 0 | 10.25 |
| 130 | Nonparticipant | 440 | 30-Sep-97 | 1 | 1 | 2633R2 | 1.2 | 2400 | 200 | Axial/Propeller | | 0 | 0 |
| 131 | Nonparticipant | 441 | 08-Oct-97 | 1 | 1 | R06329 | 57.6 | 1 | 75 | Turbine, Well | 131.5 | 0 | 8 |
| 132 | Nonparticipant | 442 | 08-Oct-97 | 4 | 1 | R46201 | 28.8 | 1 | 20 | Turbine, Well | 40 | 0 | 8.125 |
| 133 | Nonparticipant | 443 | 18-Sep-97 | 1 | 1 | 616R52 | 28.8 | 1 | 20 | Turbine, Well | 55 | 0 | 6 |
| 134 | Nonparticipant | 444 | 18-Sep-97 | 1 | 1 | R46352 | 28.8 | 1 | 20 | Turbine, Well | | 0 | 8 |

| Participant Type | On-site Audit ID | Cox Area | Centerline Vel1 | Centerline Vel2 | Check to Use Flowmeter for GPM | Data Quality | OPE Target | Comments |
|---|---|---|---|---|---|---|---|---|
| Participant | 202 | 0 | 3.4 | 3.5 | 0 | Poor | 0.61 | DRILL 2; 60' setting; PWL estimated; centerline readings estimated |
| Participant | 203 | 82.516 | 0 | 0 | 0 | Fair | 0.69 | no valve for multipoint test |
| Participant | 205 | 0 | 4.5 | 4.7 | 0 | Fair | 0.59 | drill 2, pumps sand |
| Participant | 206 | 0 | 4.4 | 4.4 | 0 | Poor | 0.61 | pump running, no standing level = no calc of yield |
| Participant | 207 | 0 | 6.05 | 6.1 | 0 | Good | 0.65 | drill 2; normal run wide open |
| Participant | 208 | 0 | 5.7 | 5.75 | 0 | Good | 0.61 | nameplate estimated; no Pumping Water Level possible - no access |
| Participant | 209 | 0 | 4.2 | 4.2 | 0 | Poor | 0.61 | tried first run with gate valve closed -- too much turbulence; simulated centerline readings; ?falling water |
| Participant | 212 | 0 | 9.4 | 9.3 | 0 | Good | 0.58 | submersible; drill 2; requested shortest possible stop time |
| Participant | 213 | 0 | 4.2 | 4.35 | 0 | Fair | 0.64 | recovery for static = 30 minutes; run 3 wide open to reservoir; 60 HP booster on meter |
| Participant | 216 | 0 | 2.7 | 2.9 | 0 | Poor | 0.61 | obstruction in well 8-10' -- could not sound well; big pump in little well |
| Participant | 221 | 0 | 6.85 | 6.8 | 0 | Good | 0.61 | drilled 3 |
| Participant | 222 | 0 | 6.42 | 6.45 | 0 | Good | 0.61 | vibrates |
| Participant | 229 | 0 | 5.5 | 5.4 | 0 | Good | 0.69 | no gate valve, open discharge to ditch |
| Participant | 230 | 0 | 6.4 | 6.3 | 0 | Good | 0.69 | no gate valve (operable), open ditch; was running on arrival (OK to stop if emergency) |
| Participant | 231 | 117.86 | 0 | 0 | 0 | Fair | 0.69 | |
| Participant | 232 | 982.84 | 0 | 0 | 0 | Poor | 0.59 | Test hole close to check valve May have affected flow measurements. Manometer/tube not balanced at start. Total of 6 pumps. Used 36" calibration chart; very poor test |

## *Appendix H*
## *Pump Test Data Summary*

| Participant Type | On-site Audit ID | Cox Area | Centerline Vel1 | Centerline Vel2 | Check to Use Flowmeter for GPM | Data Quality | OPE Target | Comments |
|---|---|---|---|---|---|---|---|---|
| Participant | 233 | 677.7 | 0 | 0 | 0 | Poor | 0.59 | Other loads --6 pumps total at site. Very short test section--used cw cox tube to measure flow |
| Participant | 235 | 0 | 4 | 4.2 | 0 | Poor | 0.69 | needed hammer to turn valve (pin); lots of turbulence; runs to orchard |
| Participant | 236 | 0 | 4.9 | 4.8 | 0 | Good | 0.49 | drilled 2; check valves upstream; requested shortest possible run |
| Participant | 237 | 0 | 5.8 | 5.7 | 0 | Good | 0.69 | no gate valve |
| Participant | 238 | 0 | 1 | 1 | -1 | CustMeter | 0.71 | staff IDed as pump repaired in 1996 |
| Participant | 240 | 0 | 4.5 | 4.5 | 0 | Good | 0.50 | drill 2 |
| Participant | 241 | 82.516 | 0 | 0 | 0 | Poor | 0.69 | difficulty getting PWL tight; H2O readings not accurate; very, very poor test section -- TESTER RECOMMENDS -- DO NOT USE RESULTS; nearby well (ID 231) had yeild of 52 GPM/ft of DD |
| Participant | 242.1 | 117.86 | 0 | 0 | 0 | Fair | 0.71 | |
| Participant | 242.2 | 117.86 | 0 | 0 | 0 | Fair | 0.67 | |
| Participant | 243 | 0 | 1 | 1 | -1 | CustMeter | 0.71 | customer did not want to drill for manometer |
| Participant | 244 | 0 | 1 | 1 | -1 | CustMeter | 0.71 | customer did not want to drill pipe for manometer; customer Ided pump as repaired in 1996 |
| Participant | 245.1 | 29.465 | 0 | 0 | 0 | Fair | 0.61 | |
| Participant | 245.2 | 29.465 | 0 | 0 | 0 | Fair | 0.60 | corrected Run 2 power meter time to 92.5 from 72.5 seconds |
| Participant | 247 | 29.465 | 0 | 0 | 0 | Poor | 0.61 | flow measurement may be impaired due to poor test section |

| Participant Type | On-site Audit ID | Cox Area | Centerline Vel1 | Centerline Vel2 | Check to Use Flowmeter for GPM | Data Quality | OPE Target | Comments |
|---|---|---|---|---|---|---|---|---|
| Participant | 248.1 | 29.465 | 0 | 0 | 0 | Fair | 0.59 | |
| Participant | 248.2 | 82.516 | 0 | 0 | 0 | Fair | 0.63 | |
| Participant | 250 | 0 | 3.4 | 3 | 0 | Poor | 0.69 | boot in well therefore no water levels possible, air in water; all open for run 1, no gate valve; results odd re: increase in flow with increase in pressure -- data suspect. |
| Participant | 252 | 0 | 0 | 0 | -1 | Fair | 0.59 | assumed kH |
| Participant | 255 | 0 | 0 | 0 | -1 | Poor | 0.59 | assume kH & mult.; pipe not full; canal too low to create back pressure |
| Participant | 257.1 | 82.516 | 0 | 0 | 0 | Fair | 0.65 | CUSTOMER WATER METER "BOUNCING" & NOT CONSIDERED RELIABLE |
| Participant | 257.2 | 82.516 | 0 | 0 | 0 | Fair | 0.63 | |
| Participant | 257.3 | 82.516 | 0 | 0 | 0 | Fair | 0.65 | |
| Participant | 258.1 | 117.86 | 0 | 0 | 0 | Fair | 0.65 | |
| Participant | 258.2 | 117.86 | 0 | 0 | 0 | Fair | 0.63 | |
| Participant | 258.3 | 117.86 | 0 | 0 | 0 | Fair | 0.65 | |
| Participant | 259.1 | 82.516 | 0 | 0 | 0 | Fair | 0.65 | |
| Participant | 259.2 | 82.516 | 0 | 0 | 0 | Fair | 0.67 | |
| Participant | 260.1 | 117.86 | 0 | 0 | 0 | Fair | 0.65 | Gate valve may affect flow readings at higher pressure |
| Participant | 260.2 | 117.86 | 0 | 0 | 0 | Fair | 0.63 | Gate valve may affect flow readings at higher pressure |

## *Appendix H*
## *Pump Test Data Summary*

| Participant Type | On-site Audit ID | Cox Area | Centerline Vel1 | Centerline Vel2 | Check to Use Flowmeter for GPM | Data Quality | OPE Target | Comments |
|---|---|---|---|---|---|---|---|---|
| Participant | 262 | 0 | 2 | 2 | 0 | Good | 0.61 | no standing level = no calc of yield |
| Participant | 263 | 82.516 | 0 | 0 | 0 | Poor | 0.69 | NOTE: transposition of meter number digits?; fair test section; pump idle at start; measured SWL with DC line; obstruction in well preventing PWL sounding. |
| Participant | 265 | 0 | 0 | 0 | -1 | CustMeter | 0.59 | assumed kH & multiplier; used overhung tube |
| Participant | 268 | 82.516 | 0 | 0 | 0 | Fair | 0.69 | no valve for multipoint test |
| Participant | 270 | 0 | 0 | 0 | -1 | Poor (OPE High) | 0.59 | kH & mult. est.; used volt amp method; State water meter used for GPM; assisted by Ben Lazama (Dist. |
| Participant | 271 | 0 | 0 | 0 | -1 | CustMeter | 0.55 | this combination test (pumps 1 & 5 running together) was run to use flowmeter near design conditions |
| Participant | 273 | 0 | 7.65 | 7.7 | 0 | Poor | 0.51 | drill 2; put pumps 1 & 2 back on "auto" position |
| Participant | 275 | 0 | 2.3 | 2.4 | 0 | Good | 0.60 | drill 3 |
| Participant | 276 | 0 | 4.5 | 4 | 0 | Fair | 0.63 | pressurized suction, other boosters on meter; drill 3 |
| Participant | 280 | 82.516 | 0 | 0 | 0 | Fair | 0.69 | |
| Participant | 282 | 0 | 4.8 | 4.9 | 0 | Fair | 0.65 | waited for me to start siphons. Only 1 place to drill. |
| Participant | 283 | 0 | 4.7 | 4.4 | 0 | Fair | 0.61 | no place for gauge; changed sprinklers |
| Participant | 287 | 0 | 8.3 | 8.25 | 0 | Good | 0.63 | different meter (3502R4 original); 98 PSI normal; drill 3; normal run wide open; booster |
| Participant | 288 | 0 | 5 | 5 | 0 | Fair | 0.69 | rebuilt in last month; 50 HP booster; pumps to reservoir |
| Participant | 289 | 0 | 3 | 3 | 0 | Good | 0.55 | no Kh given, assume 57.6; assume submersible based on est. motor eff; assume Run #3 is normal point; drill 3 |

## *Appendix H*
## *Pump Test Data Summary*

| Participant Type | On-site Audit ID | Cox Area | Centerline Vel1 | Centerline Vel2 | Check to Use Flowmeter for GPM | Data Quality | OPE Target | Comments |
|---|---|---|---|---|---|---|---|---|
| Participant | 290 | 0 | 7.8 | 7.75 | 0 | Good | 0.69 | FLOW STRAIGHT FOR UPPER RESERVOIR; TURN RIGHT FOR LOWER |
| Participant | 291 | 0 | 4.6 | 4.7 | 0 | Poor | 0.69 | some sand in collins; normal flow reservoir, throttle with gate valve; can't sound well deeper than 195'; run 3 able to sound "2 psi @ 162' extension"; estimated PWL for Runs 1 |
| Participant | 292 | 82.516 | 0 | 0 | 0 | Poor | 0.69 | obstruction at 330 ft prevented PWL measurements |
| Participant | 293 | 51.849 | 0 | 0 | 0 | Fair | 0.69 | cal @ 500 ft per pump dealer; filter system no longer in use |
| Participant | 297 | 82.516 | 0 | 0 | 0 | Fair | 0.69 | no valve for pressure |
| Participant | 301 | 0 | 9.4 | 9.45 | 0 | Good | 0.62 | drainage ditch, pump into slough; drill 2 |
| Nonparticipant | 305 | 0 | 4.2 | 4.3 | 0 | Fair | 0.53 | meter number format is odd; assumed nameplate HP; tanks were overflowing; second pump possible; filter on discharge |
| Nonparticipant | 319 | 82.516 | 0 | 0 | 0 | Fair | 0.71 | original listed pump could not be tested - this pump offered by customer as closest |
| Nonparticipant | 320 | 29.465 | 0 | 0 | 0 | Poor | 0.59 | customer selected different than selected pump for test; deep well turbine pump used to flood irrigate; also uses booster for trickle irrigation; irrigator said pump has been bad for 5 years; most irrigation done with ditch water |
| Nonparticipant | 328 | 58.426 | 0 | 0 | 0 | Poor | 0.60 | no entrance to sound well; est. PWL at 50-70 ft. |
| Nonparticipant | 329 | 82.516 | 0 | 0 | 0 | Fair | 0.69 | adjusted water levels by 28 ft for 35 ft of oil |

## *Appendix H*
## *Pump Test Data Summary*

| Participant Type | On-site Audit ID | Cox Area | Centerline Vel1 | Centerline Vel2 | Check to Use Flowmeter for GPM | Data Quality | OPE Target | Comments |
|---|---|---|---|---|---|---|---|---|
| Nonparticipant | 335 | 29.465 | 0 | 0 | -1 | CustMeter | 0.65 | flow affected by gate valve - use customer water meter |
| Nonparticipant | 338 | 0 | 6.55 | 6.45 | 0 | Good | 0.69 | drip - above ground; 8" loop system; run 3 wide open |
| Nonparticipant | 341 | 0 | 1.4 | 1.2 | 0 | Fair | 0.54 | HP estimated; drill 2; pump filled tank before test |
| Nonparticipant | 347 | 0 | 3.9 | 4 | 0 | Good | 0.61 | |
| Nonparticipant | 349 | 0 | 3.6 | 3.6 | 0 | Fair | 0.65 | pulled vacumn with booster on; run 3 wide open |
| Nonparticipant | 350 | 0 | 5.3 | 5.4 | 0 | Fair | 0.54 | drill 2, small pipe, flowmeter |
| Nonparticipant | 357 | 0 | 6.7 | 6.6 | 0 | Good | 0.59 | Barn Pump; ID hard to read; was ID 357.1 |
| Nonparticipant | 362.1 | 0 | 0 | 0 | -1 | Fair | 0.53 | water meter only exposed component; survey for total head - no place to attach pressure gauges |
| Nonparticipant | 362.2 | 0 | 0 | 0 | -1 | Fair | 0.59 | survey for Total Lift |
| Nonparticipant | 362.3 | 0 | 0 | 0 | -1 | Fair | 0.59 | survey for Total Lift |
| Nonparticipant | 362.4 | 0 | 0 | 0 | -1 | Fair | 0.59 | survey for Total Lift |
| Nonparticipant | 366 | 0 | 6.9 | 7 | 0 | Poor | 0.61 | different meter number (original 264T61); test section poor; drill 2 |
| Nonparticipant | 375 | 0 | 9.5 | 9.4 | 0 | Fair | 0.51 | ASSUME SUBMERSIBLE; drill 2; not at design, can't valve; take out 2 1/2 plug, gate valve studs close |
| Nonparticipant | 377 | 0 | 9.1 | 9.2 | 0 | Good | 0.63 | drill 2; |
| Nonparticipant | 381 | 0 | 23.75 | 24 | 0 | Fair | 0.59 | drill 2; difficult conditions |
| Nonparticipant | 383 | 0 | 5.4 | 5.4 | 0 | Good | 0.69 | no configuration noted |
| Nonparticipant | 389 | 29.465 | 0 | 0 | 0 | Fair | 0.63 | |
| Nonparticipant | 394 | 0 | 4 | 4.2 | 0 | Poor | 0.69 | hole in base has plastic tubing; obstruction at 130' - PWL estimated |
| Nonparticipant | 395 | 0 | 5.3 | 5.45 | 0 | Poor | 0.61 | combined well & booster on meter; Run 1 with booster, run 2 deep well only; new tenant on ranch |
| Nonparticipant | 396 | 51.849 | 0 | 0 | 0 | Fair | 0.61 | |

| Participant Type | On-site Audit ID | Cox Area | Centerline Vel1 | Centerline Vel2 | Check to Use Flowmeter for GPM | Data Quality | OPE Target | Comments |
|---|---|---|---|---|---|---|---|---|
| Nonparticipant | 397 | 51.849 | 0 | 0 | 0 | Fair | 0.69 | no valve |
| Nonparticipant | 399 | 0 | 9.35 | 9.4 | 0 | Good | 0.61 | different meter (58R968 ORIGINAL) |
| Nonparticipant | 400 | 0 | 3.8 | 3.8 | 0 | Good | 0.63 | DIFFERENT METER NUMBERS (ORIGINAL R92511) |
| Nonparticipant | 401 | 0 | 3.8 | 3.7 | 0 | Good | 0.51 | ASSUME SUBMERSIBLE; no entrance to well -- assume SWL & |
| Nonparticipant | 402 | 28.274 | 0 | 0 | 0 | Fair | 0.59 | pump set @ 130'; lots of vibration; no valve or check |
| Nonparticipant | 403 | 51.844 | 0 | 0 | 0 | Fair | 0.61 | gate valve may have affected measurement on runs 2 & 3 |
| Nonparticipant | 404 | 58.426 | 0 | 0 | 0 | Poor | 0.61 | Old Meter# 68R298; oil on water in well -- may have affected water level readings |
| Nonparticipant | 405 | 57.583 | 0 | 0 | 0 | Poor | 0.61 | poor test section; gate valve stuck -- no multipoint test |
| Nonparticipant | 406 | 88.664 | 0 | 0 | 0 | Fair | 0.69 | no valve for multipoint test |
| Nonparticipant | 408 | 12.566 | 0 | 0 | 0 | Poor | 0.56 | Kh & mult. est.; nameplate HP est. by customer; very poor test section; volt-amp method used for input HP est. |
| Nonparticipant | 409 | 51.849 | 0 | 0 | 0 | Poor | 0.59 | poor test section; unable to sound well; valve in wrong location for multipoint test |
| Nonparticipant | 410 | 82.516 | 0 | 0 | 0 | Omit Test | 0.69 | could not build pressure for multi-point test -- no valve; poor test section |
| Nonparticipant | 411 | 12.566 | 0 | 0 | 0 | Fair | 0.53 | no place for PSI ahead of valve; drip to citrus |
| Nonparticipant | 412 | 31.29 | 0 | 0 | 0 | Fair | 0.51 | normal PSI = 35; trickle system to vineyard |
| Nonparticipant | 414 | 12.566 | 0 | 0 | 0 | Fair | 0.53 | wagon wheel well; operates at three different pressures: 9psi for flodd; 34 psi for trickle; 61 psi for uphill trickle |
| Nonparticipant | 415 | 82.516 | 0 | 0 | 0 | Fair | 0.69 | Not previously tested |
| Nonparticipant | 416 | 51.849 | 0 | 0 | 0 | Fair | 0.61 | no valve for multipoint test |

| Participant Type | On-site Audit ID | Cox Area | Centerline Vel1 | Centerline Vel2 | Check to Use Flowmeter for GPM | Data Quality | OPE Target | Comments |
|---|---|---|---|---|---|---|---|---|
| Nonparticipant | 417 | 0 | 0.7 | 0.6 | 0 | Poor | 0.56 | drill 2; no entrance to well |
| Nonparticipant | 418 | 115.147 | 0 | 0 | 0 | Poor | 0.49 | poor test section; station 14 pump 5; was labelled 418A |
| Nonparticipant | 420 | 0 | 9.65 | 9.6 | 0 | Poor | 0.69 | New meter -- old was R04770; test form did not have kH or pump type -- assumed 4.8x40 and Turbine |
| Nonparticipant | 421 | 0 | 8.8 | 8.9 | 0 | Poor | 0.69 | 75 HP booster pump on same meter; booster was on for this test |
| Nonparticipant | 422 | 0 | 7.4 | 7.35 | 0 | Poor | 0.63 | boot in well - could not sound -- no SWL or PWL or OPE |
| Nonparticipant | 423 | 0 | 5.5 | 5.6 | 0 | Poor | 0.63 | boot in well - could not sound -- no SWL or PWL or OPE |
| Nonparticipant | 424 | 0 | 6.8 | 7.05 | 0 | Poor | 0.63 | boot in well - could not sound -- no SWL or PWL or OPE |
| Nonparticipant | 425 | 29.465 | 0 | 0 | 0 | Fair | 0.63 | adjusted water levels 11.2 ft for 14 ft of oil |
| Nonparticipant | 426 | 82.516 | 0 | 0 | 0 | Poor | 0.69 | no entrance to well -- cannot sound; nearby well had SWL = 90.8 ft; PWL estimated |
| Nonparticipant | 427 | 82.516 | 0 | 0 | 0 | Poor | 0.69 | airline without known length -- used nearby well (ID 436) for SWL estimate & air pressure differential for PWL estimate; no entrance for |
| Nonparticipant | 429 | 82.516 | 0 | 0 | 0 | Fair | 0.69 | fair test section |
| Nonparticipant | 430 | 12.566 | 0 | 0 | 0 | Fair | 0.58 | |
| Nonparticipant | 431 | 115.47 | 0 | 0 | 0 | Fair | 0.49 | poor test section; variable speed drive & motor; ; station 14 pump 4; was labelled 418B & 431 |
| Nonparticipant | 432 | 113.098 | 0 | 0 | 0 | Fair | 0.49 | variable speed drive; was labelled 420A & 432 |
| Nonparticipant | 433 | 113.098 | 0 | 0 | 0 | Fair | 0.49 | variable speed drive for motor; was labelled 420B and 433 |

## *Appendix H*
## *Pump Test Data Summary*

| Participant Type | On-site Audit ID | Cox Area | Centerline Vel1 | Centerline Vel2 | Check to Use Flowmeter for GPM | Data Quality | OPE Target | Comments |
|---|---|---|---|---|---|---|---|---|
| Nonparticipant | 434 | 113.098 | 0 | 0 | 0 | Poor | 0.71 | Station 12 pump 5; very poor test section; est. HPI for run 3; was labelled 421 |
| Nonparticipant | 435 | 82.516 | 0 | 0 | 0 | Poor | 0.69 | used customer airline but length unknown; used SWL from ID 436; no entrance to sound well |
| Nonparticipant | 436 | 82.516 | 0 | 0 | 0 | Fair | 0.69 | no valve for multipoint test |
| Nonparticipant | 437 | 78.54 | 0 | 0 | 0 | Poor | 0.69 | Very poor test section to measure |
| Nonparticipant | 438 | 82.516 | 0 | 0 | 0 | Fair | 0.69 | good test section; water to reservoir |
| Nonparticipant | 439 | 82.516 | 0 | 0 | 0 | Fair | 0.69 | no valve for multipoint test |
| Nonparticipant | 440 | 0 | 0 | 0 | -1 | CustMeter | 0.59 | flow determined by difference in flow for single vs multiple pumps |
| Nonparticipant | 441 | 50.266 | 0 | 0 | 0 | Fair | 0.69 | no valve for multipoint test |
| Nonparticipant | 442 | 51.849 | 0 | 0 | 0 | Fair | 0.59 | pump was idle |
| Nonparticipant | 443 | 0 | 3.4 | 3.4 | 0 | Poor | 0.59 | Lindsay; was ID 357.2 |
| Nonparticipant | 444 | 0 | 3 | 2.9 | 0 | Poor | 0.59 | North 70; casing plugged - could not sound; was numbered 357.3 |

## *Appendix H*
## *Pump Test Data Summary*

### *Pump Runs*

| Participant Type | On-site Audit ID | Run | Date of Test | Total Load (Ft) | Gallons Per Minute | Field Measured GPM | KW Input | MtrLoad | PumpEff | OPE | OPE Rating | Yield |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Participant | 202 | 1 | 11-Sep-97 | 281.0 | 296.6 | 0 | 31.16 | 1.24 | 0.56 | 0.50 | Poor | 7.8 |
| Participant | 203 | 1 | 17-Sep-97 | 450.5 | 2010.9 | 0 | 205.90 | 1.02 | 0.90 | 0.83 | Good | 50.3 |
| Participant | 205 | 1 | 07-Aug-97 | 117.4 | 491.2 | 0 | 20.21 | 1.19 | 0.61 | 0.54 | Fair | 42.9 |
| Participant | 206 | 1 | 07-Aug-97 | 149.2 | 786.4 | 0 | 35.56 | 1.07 | 0.69 | 0.62 | Good | 0.0 |
| Participant | 207 | 1 | 11-Sep-97 | 144.7 | 1268.4 | 0 | 59.71 | 1.21 | 0.64 | 0.58 | Fair | 105.7 |
| Participant | 207 | 2 | 11-Sep-97 | 135.3 | 1312.3 | 0 | 60.80 | 1.23 | 0.61 | 0.55 | Fair | 100.9 |
| Participant | 207 | 3 | 11-Sep-97 | 125.9 | 1365.7 | 0 | 61.04 | 1.23 | 0.59 | 0.53 | Poor | 97.6 |
| Participant | 208 | 1 | 22-Aug-97 | 13.9 | 1221.9 | 0 | 36.20 | 1.09 | 0.10 | 0.00 | Poor | 0.0 |
| Participant | 209 | 1 | 21-Aug-97 | 117.8 | 360.4 | 0 | 28.35 | 0.85 | 0.31 | 0.28 | Poor | 4.7 |
| Participant | 212 | 1 | 22-Aug-97 | 281.3 | 365.7 | 0 | 37.97 | 0.87 | 0.60 | 0.51 | Fair | 0.0 |
| Participant | 213 | 1 | 21-Aug-97 | 409.5 | 927.3 | 0 | 112.31 | 1.06 | 0.72 | 0.64 | Fair | 58.0 |
| Participant | 213 | 2 | 21-Aug-97 | 376.9 | 1018.5 | 0 | 113.54 | 1.07 | 0.72 | 0.64 | Fair | 56.6 |
| Participant | 213 | 3 | 21-Aug-97 | 366.0 | 1051.5 | 0 | 113.29 | 1.07 | 0.73 | 0.64 | Good | 50.1 |
| Participant | 216 | 1 | 11-Sep-97 | 63.5 | 458.7 | 0 | 28.35 | 1.13 | 0.22 | 0.00 | Poor | 0.0 |
| Participant | 216 | 2 | 11-Sep-97 | 49.7 | 483.5 | 0 | 28.67 | 1.14 | 0.18 | 0.00 | Poor | 0.0 |
| Participant | 216 | 3 | 11-Sep-97 | 41.6 | 508.3 | 0 | 28.79 | 1.15 | 0.15 | 0.00 | Poor | 0.0 |
| Participant | 221 | 1 | 18-Sep-97 | 106.2 | 991.5 | 0 | 30.50 | 1.22 | 0.73 | 0.65 | Good | 62.0 |
| Participant | 222 | 1 | 18-Sep-97 | 94.5 | 967.3 | 0 | 28.33 | 1.13 | 0.68 | 0.61 | Fair | 69.1 |
| Participant | 229 | 1 | 07-Aug-97 | 158.8 | 1338.4 | 0 | 71.14 | 0.87 | 0.62 | 0.56 | Poor | 0.0 |
| Participant | 230 | 1 | 07-Aug-97 | 172.2 | 1546.1 | 0 | 89.28 | 0.88 | 0.61 | 0.56 | Poor | 0.0 |
| Participant | 231 | 1 | 02-Sep-97 | 261.1 | 2054.3 | 0 | 143.71 | 1.18 | 0.77 | 0.70 | Good | 51.4 |
| Participant | 231 | 2 | 02-Sep-97 | 273.0 | 2002.4 | 0 | 144.31 | 1.19 | 0.78 | 0.71 | Good | 52.7 |
| Participant | 231 | 3 | 02-Sep-97 | 285.3 | 1942.3 | 0 | 143.95 | 1.18 | 0.79 | 0.73 | Good | 53.2 |
| Participant | 231 | 4 | 02-Sep-97 | 301.8 | 1799.7 | 0 | 144.13 | 1.18 | 0.77 | 0.71 | Good | 52.2 |
| Participant | 232 | 1 | 10-Sep-97 | 27.0 | 24777.4 | 0 | 156.25 | 0.96 | 0.88 | 0.81 | Good | 0.0 |
| Participant | 232 | 2 | 10-Sep-97 | 32.8 | 23352.3 | 0 | 171.32 | 1.06 | 0.91 | 0.84 | Good | 0.0 |
| Participant | 232 | 3 | 10-Sep-97 | 37.4 | 21249.0 | 0 | 185.04 | 1.14 | 0.88 | 0.81 | Good | 0.0 |
| Participant | 233 | 1 | 10-Sep-97 | 44.1 | 18907.8 | 0 | 215.00 | 0.88 | 0.79 | 0.73 | Good | 0.0 |
| Participant | 233 | 2 | 10-Sep-97 | 47.5 | 17484.7 | 0 | 223.00 | 0.92 | 0.76 | 0.70 | Good | 0.0 |
| Participant | 233 | 3 | 10-Sep-97 | 52.2 | 16603.7 | 0 | 224.94 | 0.92 | 0.79 | 0.73 | Good | 0.0 |
| Participant | 235 | 1 | 08-Aug-97 | 306.3 | 593.6 | 0 | 67.23 | 1.09 | 0.56 | 0.51 | Poor | 114.2 |
| Participant | 235 | 2 | 08-Aug-97 | 296.7 | 776.0 | 0 | 67.89 | 1.11 | 0.70 | 0.64 | Fair | 107.8 |
| Participant | 235 | 3 | 08-Aug-97 | 266.4 | 843.9 | 0 | 68.77 | 1.12 | 0.68 | 0.62 | Fair | 91.7 |
| Participant | 236 | 1 | 08-Aug-97 | 235.7 | 171.6 | 0 | 14.57 | 1.13 | 0.60 | 0.52 | Good | 171.6 |

## *Appendix H*
## *Pump Test Data Summary*

### *Pump Runs*

| Participant Type | On-site Audit ID | Run | Date of Test | Total Load (Ft) | Gallons Per Minute | Field Measured GPM | KW Input | MtrLoad | PumpEff | OPE | OPE Rating | Yield |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Participant | 236 | 2 | 08-Aug-97 | 215.4 | 192.7 | 0 | 14.68 | 1.14 | 0.61 | 0.53 | Good | 128.5 |
| Participant | 236 | 3 | 08-Aug-97 | 175.3 | 225.4 | 0 | 15.12 | 1.18 | 0.57 | 0.49 | Good | 75.1 |
| Participant | 237 | 1 | 07-Aug-97 | 131.2 | 1306.0 | 0 | 51.35 | 0.84 | 0.69 | 0.63 | Fair | 27.8 |
| Participant | 238 | 1 | 19-Aug-97 | 188.5 | 4500.0 | 4500 | 230.30 | 0.95 | 0.75 | 0.69 | Fair | 45000.0 |
| Participant | 238 | 2 | 19-Aug-97 | 203.5 | 4275.0 | 4275 | 236.17 | 0.97 | 0.75 | 0.69 | Fair | 42750.0 |
| Participant | 238 | 3 | 19-Aug-97 | 216.2 | 4095.0 | 4095 | 231.22 | 0.95 | 0.78 | 0.72 | Good | 40950.0 |
| Participant | 238 | 4 | 19-Aug-97 | 225.5 | 3870.0 | 3870 | 226.18 | 0.93 | 0.79 | 0.73 | Good | 38700.0 |
| Participant | 240 | 1 | 07-Aug-97 | 21.6 | 2663.5 | 0 | 20.87 | 0.99 | 0.58 | 0.52 | Good | 0.0 |
| Participant | 241 | 1 | 02-Sep-97 | 226.0 | 1595.9 | 0 | 144.91 | 1.19 | 0.51 | 0.47 | Poor | 0.0 |
| Participant | 242.1 | 1 | 19-Aug-97 | 127.6 | 1383.7 | 1010 | 57.40 | 0.93 | 0.64 | 0.58 | Poor | 0.0 |
| Participant | 242.1 | 2 | 19-Aug-97 | 166.9 | 1196.3 | 864 | 56.86 | 0.93 | 0.73 | 0.66 | Fair | 0.0 |
| Participant | 242.1 | 3 | 19-Aug-97 | 203.9 | 1001.8 | 717 | 54.70 | 0.89 | 0.77 | 0.70 | Fair | 0.0 |
| Participant | 242.2 | 1 | 19-Aug-97 | 201.5 | 921.7 | 684 | 55.54 | 1.12 | 0.70 | 0.63 | Fair | 0.0 |
| Participant | 242.2 | 2 | 19-Aug-97 | 190.0 | 1089.0 | 782 | 56.14 | 1.14 | 0.77 | 0.69 | Good | 0.0 |
| Participant | 242.2 | 3 | 19-Aug-97 | 169.2 | 1221.0 | 912 | 57.25 | 1.16 | 0.75 | 0.68 | Good | 0.0 |
| Participant | 243 | 1 | 19-Aug-97 | 143.1 | 2648.0 | 2648 | 119.55 | 0.98 | 0.65 | 0.60 | Poor | 26480.0 |
| Participant | 243 | 2 | 19-Aug-97 | 177.8 | 2468.0 | 2468 | 123.43 | 1.01 | 0.73 | 0.67 | Fair | 24680.0 |
| Participant | 243 | 3 | 19-Aug-97 | 203.2 | 2020.0 | 2020 | 117.02 | 0.96 | 0.72 | 0.66 | Fair | 20200.0 |
| Participant | 244 | 1 | 19-Aug-97 | 130.4 | 1436.0 | 1436 | 58.74 | 0.96 | 0.66 | 0.60 | Poor | 14360.0 |
| Participant | 244 | 2 | 19-Aug-97 | 174.3 | 1077.0 | 1077 | 71.37 | 1.16 | 0.54 | 0.50 | Poor | 10770.0 |
| Participant | 244 | 3 | 19-Aug-97 | 204.4 | 808.0 | 808 | 54.31 | 0.88 | 0.63 | 0.57 | Poor | 8080.0 |
| Participant | 245.1 | 1 | 18-Aug-97 | 102.6 | 455.5 | 515 | 15.80 | 1.23 | 0.64 | 0.56 | Fair | 0.0 |
| Participant | 245.1 | 2 | 18-Aug-97 | 114.1 | 420.2 | 465 | 15.66 | 1.22 | 0.66 | 0.58 | Fair | 0.0 |
| Participant | 245.1 | 3 | 18-Aug-97 | 124.5 | 376.3 | 425 | 15.34 | 1.19 | 0.66 | 0.58 | Fair | 0.0 |
| Participant | 245.1 | 4 | 18-Aug-97 | 134.9 | 317.6 | 350 | 14.23 | 1.11 | 0.65 | 0.57 | Fair | 0.0 |
| Participant | 245.2 | 1 | 18-Aug-97 | 142.6 | 162.1 | 104 | 8.37 | 0.96 | 0.61 | 0.52 | Fair | 0.0 |
| Participant | 245.2 | 2 | 18-Aug-97 | 151.8 | 143.5 | 91 | 7.48 | 0.86 | 0.64 | 0.55 | Fair | 0.0 |
| Participant | 245.2 | 3 | 18-Aug-97 | 174.9 | 41.3 | 65 | 7.36 | 0.85 | 0.21 | 0.18 | Poor | 0.0 |
| Participant | 247 | 1 | 18-Aug-97 | 87.4 | 612.6 | 665 | 16.04 | 0.95 | 0.71 | 0.63 | Good | 0.0 |
| Participant | 247 | 2 | 18-Aug-97 | 98.9 | 562.8 | 610 | 16.33 | 0.96 | 0.73 | 0.64 | Good | 0.0 |
| Participant | 247 | 3 | 18-Aug-97 | 112.8 | 476.4 | 520 | 16.13 | 0.95 | 0.71 | 0.63 | Good | 0.0 |
| Participant | 247 | 4 | 18-Aug-97 | 124.3 | 368.3 | 440 | 15.60 | 0.92 | 0.63 | 0.55 | Fair | 0.0 |
| Participant | 248.1 | 1 | 19-Aug-97 | 73.9 | 628.5 | 960 | 19.01 | 1.12 | 0.52 | 0.46 | Poor | 0.0 |
| Participant | 248.1 | 2 | 19-Aug-97 | 83.2 | 627.0 | 900 | 19.08 | 1.13 | 0.59 | 0.51 | Fair | 0.0 |

## *Appendix H*
## *Pump Test Data Summary*

### *Pump Runs*

| Participant Type | On-site Audit ID | Run | Date of Test | Total Load (Ft) | Gallons Per Minute | Field Measured GPM | KW Input | MtrLoad | PumpEff | OPE | OPE Rating | Yield |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Participant | 248.1 | 3 | 19-Aug-97 | 97.0 | 576.3 | 850 | 19.27 | 1.14 | 0.62 | 0.55 | Fair | 0.0 |
| Participant | 248.2 | 1 | 18-Aug-97 | 86.5 | 2893.8 | 0 | 62.08 | 1.50 | 0.84 | 0.76 | Good | 0.0 |
| Participant | 250 | 1 | 05-Aug-97 | 110.0 | 639.8 | 0 | 61.22 | 0.75 | 0.24 | 0.00 | Poor | 0.0 |
| Participant | 250 | 2 | 05-Aug-97 | 135.4 | 711.6 | 0 | 62.33 | 0.76 | 0.32 | 0.00 | Poor | 0.0 |
| Participant | 252 | 1 | 19-Sep-97 | 17.2 | 16900.0 | 16900 | 106.85 | 1.05 | 0.56 | 0.51 | Fair | 169000.0 |
| Participant | 255 | 1 | 19-Sep-97 | 16.0 | 37049.0 | 37049 | 175.99 | 1.09 | 0.69 | 0.63 | Good | 370490.0 |
| Participant | 257.1 | 1 | 19-Aug-97 | 101.0 | 1861.6 | 0 | 45.70 | 1.10 | 0.86 | 0.78 | Good | 0.0 |
| Participant | 257.1 | 2 | 19-Aug-97 | 114.9 | 1731.2 | 0 | 47.13 | 1.14 | 0.88 | 0.80 | Good | 0.0 |
| Participant | 257.1 | 3 | 19-Aug-97 | 121.8 | 1645.4 | 1490 | 47.89 | 1.16 | 0.87 | 0.79 | Good | 0.0 |
| Participant | 257.1 | 4 | 19-Aug-97 | 128.7 | 1544.7 | 1400 | 48.37 | 1.17 | 0.86 | 0.77 | Good | 0.0 |
| Participant | 257.2 | 1 | 19-Aug-97 | 76.9 | 1007.5 | 950 | 22.76 | 0.91 | 0.72 | 0.64 | Good | 0.0 |
| Participant | 257.2 | 2 | 19-Aug-97 | 86.2 | 967.1 | 860 | 23.19 | 0.93 | 0.76 | 0.68 | Good | 0.0 |
| Participant | 257.2 | 3 | 19-Aug-97 | 95.4 | 949.8 | 810 | 23.82 | 0.95 | 0.80 | 0.72 | Good | 0.0 |
| Participant | 257.2 | 4 | 19-Aug-97 | 118.5 | 842.5 | 750 | 24.45 | 0.98 | 0.86 | 0.77 | Good | 0.0 |
| Participant | 257.3 | 1 | 19-Aug-97 | 107.0 | 1670.1 | 1550 | 47.53 | 1.15 | 0.79 | 0.71 | Good | 0.0 |
| Participant | 257.3 | 2 | 19-Aug-97 | 117.3 | 1544.7 | 1460 | 48.33 | 1.17 | 0.78 | 0.71 | Good | 0.0 |
| Participant | 257.3 | 3 | 19-Aug-97 | 130.1 | 1430.8 | 1330 | 48.73 | 1.18 | 0.80 | 0.72 | Good | 0.0 |
| Participant | 257.3 | 4 | 19-Aug-97 | 139.3 | 1282.3 | 1160 | 47.94 | 1.16 | 0.78 | 0.70 | Good | 0.0 |
| Participant | 258.1 | 1 | 19-Aug-97 | 88.8 | 1919.9 | 1710 | 44.23 | 1.07 | 0.81 | 0.73 | Good | 0.0 |
| Participant | 258.1 | 2 | 19-Aug-97 | 105.0 | 1765.5 | 1510 | 45.82 | 1.11 | 0.85 | 0.76 | Good | 0.0 |
| Participant | 258.1 | 3 | 19-Aug-97 | 121.1 | 1586.4 | 1220 | 47.70 | 1.15 | 0.84 | 0.76 | Good | 0.0 |
| Participant | 258.1 | 4 | 19-Aug-97 | 141.9 | 1282.3 | 1140 | 47.08 | 1.14 | 0.81 | 0.73 | Good | 0.0 |
| Participant | 258.2 | 1 | 19-Aug-97 | 79.5 | 1074.9 | 1000 | 23.58 | 0.94 | 0.76 | 0.68 | Good | 0.0 |
| Participant | 258.2 | 2 | 19-Aug-97 | 91.1 | 1017.1 | 900 | 23.90 | 0.95 | 0.82 | 0.73 | Good | 0.0 |
| Participant | 258.2 | 3 | 19-Aug-97 | 111.9 | 938.2 | 850 | 24.92 | 0.99 | 0.89 | 0.79 | Good | 0.0 |
| Participant | 258.2 | 4 | 19-Aug-97 | 128.1 | 854.5 | 750 | 25.29 | 1.01 | 0.91 | 0.82 | Good | 0.0 |
| Participant | 258.3 | 1 | 19-Aug-97 | 88.8 | 1973.0 | 1800 | 43.88 | 1.06 | 0.83 | 0.75 | Good | 0.0 |
| Participant | 258.3 | 2 | 19-Aug-97 | 102.6 | 1773.8 | 1650 | 45.12 | 1.09 | 0.84 | 0.76 | Good | 0.0 |
| Participant | 258.3 | 3 | 19-Aug-97 | 116.5 | 1643.0 | 1480 | 46.29 | 1.12 | 0.86 | 0.78 | Good | 0.0 |
| Participant | 258.3 | 4 | 19-Aug-97 | 135.0 | 1383.7 | 1300 | 46.97 | 1.13 | 0.83 | 0.75 | Good | 0.0 |
| Participant | 259.1 | 1 | 20-Aug-97 | 125.7 | 1469.6 | 1425 | 45.20 | 1.09 | 0.85 | 0.77 | Good | 0.0 |
| Participant | 259.1 | 2 | 20-Aug-97 | 132.7 | 1401.9 | 1350 | 45.16 | 1.09 | 0.86 | 0.78 | Good | 0.0 |
| Participant | 259.1 | 3 | 20-Aug-97 | 139.6 | 1275.7 | 1205 | 44.44 | 1.07 | 0.84 | 0.76 | Good | 0.0 |
| Participant | 259.1 | 4 | 20-Aug-97 | 150.0 | 1076.8 | 1025 | 42.47 | 1.03 | 0.80 | 0.72 | Good | 0.0 |

## *Appendix H*
## *Pump Test Data Summary*

### *Pump Runs*

| Participant Type | On-site Audit ID | Run | Date of Test | Total Load (Ft) | Gallons Per Minute | Field Measured GPM | KW Input | MtrLoad | PumpEff | OPE | OPE Rating | Yield |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Participant | 259.2 | 1 | 20-Aug-97 | 118.8 | 1595.9 | 1450 | 47.49 | 0.96 | 0.83 | 0.75 | Good | 0.0 |
| Participant | 259.2 | 2 | 20-Aug-97 | 128.1 | 1518.3 | 1375 | 48.51 | 0.98 | 0.83 | 0.76 | Good | 0.0 |
| Participant | 259.2 | 3 | 20-Aug-97 | 137.3 | 1413.5 | 1250 | 48.98 | 0.99 | 0.82 | 0.75 | Good | 0.0 |
| Participant | 259.2 | 4 | 20-Aug-97 | 146.5 | 1282.3 | 1150 | 48.42 | 0.98 | 0.81 | 0.73 | Good | 0.0 |
| Participant | 260.1 | 1 | 20-Aug-97 | 89.8 | 1961.2 | 0 | 45.24 | 1.09 | 0.81 | 0.73 | Good | 0.0 |
| Participant | 260.1 | 2 | 20-Aug-97 | 101.3 | 1848.0 | 0 | 45.92 | 1.11 | 0.85 | 0.77 | Good | 0.0 |
| Participant | 260.1 | 3 | 20-Aug-97 | 110.6 | 1705.4 | 0 | 46.91 | 1.13 | 0.84 | 0.76 | Good | 0.0 |
| Participant | 260.1 | 4 | 20-Aug-97 | 129.1 | 1586.4 | 0 | 48.04 | 1.16 | 0.89 | 0.80 | Good | 0.0 |
| Participant | 260.2 | 1 | 20-Aug-97 | 73.6 | 921.7 | 0 | 20.19 | 0.81 | 0.71 | 0.63 | Good | 0.0 |
| Participant | 260.2 | 2 | 20-Aug-97 | 99.0 | 776.7 | 725 | 21.16 | 0.84 | 0.77 | 0.68 | Good | 0.0 |
| Participant | 260.2 | 3 | 20-Aug-97 | 112.9 | 714.2 | 650 | 21.40 | 0.85 | 0.79 | 0.71 | Good | 0.0 |
| Participant | 260.2 | 4 | 20-Aug-97 | 129.1 | 668.3 | 600 | 21.68 | 0.87 | 0.84 | 0.75 | Good | 0.0 |
| Participant | 260.2 | 5 | 20-Aug-97 | 142.9 | 619.9 | 550 | 21.56 | 0.86 | 0.87 | 0.77 | Good | 0.0 |
| Participant | 262 | 1 | 11-Aug-97 | 125.3 | 476.2 | 481.7729 | 22.36 | 0.89 | 0.56 | 0.50 | Poor | 0.0 |
| Participant | 262 | 2 | 11-Aug-97 | 121.1 | 604.9 | 553.4204 | 25.86 | 1.03 | 0.60 | 0.53 | Fair | 0.0 |
| Participant | 262 | 3 | 11-Aug-97 | 117.9 | 675.7 | 738.1209 | 27.60 | 1.10 | 0.61 | 0.54 | Fair | 0.0 |
| Participant | 263 | 1 | 02-Sep-97 | 4.6 | 2109.1 | 0 | 230.83 | 1.14 | 0.01 | 0.00 | Poor | -7.9 |
| Participant | 263 | 2 | 02-Sep-97 | 23.1 | 2019.2 | 0 | 230.83 | 1.14 | 0.04 | 0.00 | Poor | -7.6 |
| Participant | 263 | 3 | 02-Sep-97 | 53.1 | 1999.4 | 0 | 231.07 | 1.14 | 0.09 | 0.00 | Poor | -7.5 |
| Participant | 265 | 1 | 19-Sep-97 | 15.4 | 40635.0 | 40635 | 286.49 | 1.01 | 0.45 | 0.41 | Poor | 0.0 |
| Participant | 268 | 1 | 02-Sep-97 | 284.0 | 1378.8 | 0 | 110.23 | 1.09 | 0.73 | 0.67 | Fair | 30.6 |
| Participant | 270 | 1 | 30-Sep-97 | 235.4 | 28588.0 | 28588 | 1419.91 | 0.88 | 0.97 | 0.89 | Good | 0.0 |
| Participant | 271 | 1 | 30-Sep-97 | 118.1 | 15797.0 | 15797 | 474.28 | 0.96 | 0.82 | 0.74 | Good | 0.0 |
| Participant | 273 | 1 | 08-Aug-97 | 21.6 | 4839.5 | 0 | 30.32 | 1.21 | 0.73 | 0.65 | Good | 0.0 |
| Participant | 275 | 1 | 08-Aug-97 | 207.1 | 221.6 | 0 | 15.26 | 0.73 | 0.64 | 0.57 | Fair | 44.3 |
| Participant | 275 | 2 | 08-Aug-97 | 189.0 | 415.2 | 0 | 20.53 | 0.98 | 0.81 | 0.72 | Good | 41.5 |
| Participant | 275 | 3 | 08-Aug-97 | 160.9 | 514.9 | 0 | 21.73 | 1.03 | 0.81 | 0.72 | Good | 42.9 |
| Participant | 276 | 1 | 22-Aug-97 | 363.7 | 169.3 | 0 | 26.81 | 0.65 | 0.48 | 0.43 | Poor | 0.0 |
| Participant | 276 | 2 | 22-Aug-97 | 341.7 | 317.4 | 0 | 35.66 | 0.86 | 0.64 | 0.57 | Fair | 0.0 |
| Participant | 276 | 3 | 22-Aug-97 | 323.2 | 360.6 | 0 | 42.53 | 1.03 | 0.57 | 0.52 | Poor | 0.0 |
| Participant | 280 | 1 | 12-Aug-97 | 240.0 | 1469.6 | 0 | 95.33 | 1.17 | 0.76 | 0.70 | Good | 58.8 |
| Participant | 282 | 1 | 04-Sep-97 | 127.2 | 1529.6 | 0 | 47.90 | 0.97 | 0.85 | 0.76 | Good | 139.1 |
| Participant | 283 | 1 | 10-Sep-97 | 158.1 | 461.1 | 0 | 22.85 | 0.91 | 0.67 | 0.60 | Fair | 9222.6 |
| Participant | 283 | 2 | 10-Sep-97 | 135.0 | 508.1 | 0 | 23.51 | 0.94 | 0.62 | 0.55 | Fair | 10162.8 |

## *Appendix H*
## *Pump Test Data Summary*

### *Pump Runs*

| Participant Type | On-site Audit ID | Run | Date of Test | Total Load (Ft) | Gallons Per Minute | Field Measured GPM | KW Input | MtrLoad | PumpEff | OPE | OPE Rating | Yield |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Participant | 283 | 3 | 10-Sep-97 | 144.2 | 495.8 | 0 | 23.32 | 0.93 | 0.65 | 0.58 | Fair | 9916.5 |
| Participant | 287 | 1 | 10-Sep-97 | 181.3 | 732.9 | 0 | 40.00 | 0.97 | 0.69 | 0.63 | Fair | 0.0 |
| Participant | 287 | 2 | 10-Sep-97 | 209.0 | 618.0 | 0 | 36.30 | 0.88 | 0.74 | 0.67 | Good | 0.0 |
| Participant | 287 | 3 | 10-Sep-97 | 233.4 | 415.4 | 0 | 30.50 | 0.74 | 0.66 | 0.60 | Fair | 0.0 |
| Participant | 288 | 1 | 24-Sep-97 | 319.2 | 1467.2 | 0 | 126.58 | 1.04 | 0.76 | 0.70 | Good | 0.0 |
| Participant | 288 | 2 | 24-Sep-97 | 344.5 | 1415.7 | 0 | 125.78 | 1.03 | 0.79 | 0.73 | Good | 0.0 |
| Participant | 288 | 3 | 24-Sep-97 | 374.5 | 1277.4 | 0 | 125.53 | 1.03 | 0.78 | 0.72 | Good | 0.0 |
| Participant | 289 | 1 | 04-Sep-97 | 255.5 | 113.2 | 0 | 16.20 | 0.72 | 0.41 | 0.34 | Poor | 37.7 |
| Participant | 289 | 2 | 04-Sep-97 | 232.1 | 146.3 | 0 | 16.40 | 0.72 | 0.47 | 0.39 | Poor | 29.3 |
| Participant | 289 | 3 | 04-Sep-97 | 194.8 | 190.4 | 0 | 16.50 | 0.73 | 0.51 | 0.42 | Poor | 27.2 |
| Participant | 290 | 1 | 14-Jul-97 | 187.2 | 2085.0 | 0 | 115.11 | 1.13 | 0.69 | 0.64 | Fair | 0.0 |
| Participant | 290 | 2 | 14-Jul-97 | 205.1 | 1808.3 | 0 | 116.51 | 1.15 | 0.65 | 0.60 | Fair | 0.0 |
| Participant | 290 | 3 | 14-Jul-97 | 216.0 | 1731.0 | 0 | 115.11 | 1.13 | 0.67 | 0.61 | Fair | 0.0 |
| Participant | 291 | 1 | 29-Jul-97 | 231.2 | 1304.6 | 0 | 66.34 | 1.08 | 0.94 | 0.86 | Good | 28.0 |
| Participant | 291 | 2 | 29-Jul-97 | 262.2 | 872.8 | 0 | 56.76 | 0.92 | 0.83 | 0.76 | Good | 30.0 |
| Participant | 291 | 3 | 29-Jul-97 | 273.9 | 502.2 | 0 | 50.36 | 0.82 | 0.56 | 0.51 | Poor | 32.6 |
| Participant | 292 | 1 | 18-Sep-97 | 1.0 | 1023.2 | 0 | 106.11 | 1.30 | 0.00 | 0.00 | Poor | 0.0 |
| Participant | 292 | 2 | 18-Sep-97 | 16.2 | 991.8 | 0 | 106.17 | 1.30 | 0.03 | 0.00 | Poor | 0.0 |
| Participant | 292 | 3 | 18-Sep-97 | 27.7 | 967.1 | 0 | 105.62 | 1.29 | 0.05 | 0.00 | Poor | 0.0 |
| Participant | 292 | 4 | 18-Sep-97 | 39.3 | 915.1 | 0 | 103.63 | 1.27 | 0.07 | 0.00 | Poor | 0.0 |
| Participant | 293 | 1 | 03-Sep-97 | 544.0 | 912.5 | 0 | 144.35 | 1.19 | 0.70 | 0.65 | Fair | 5.4 |
| Participant | 293 | 2 | 03-Sep-97 | 550.8 | 886.6 | 0 | 143.64 | 1.18 | 0.70 | 0.64 | Fair | 5.4 |
| Participant | 293 | 3 | 03-Sep-97 | 560.1 | 871.1 | 0 | 143.83 | 1.18 | 0.70 | 0.64 | Fair | 5.4 |
| Participant | 293 | 4 | 03-Sep-97 | 571.6 | 843.6 | 0 | 140.33 | 1.15 | 0.70 | 0.65 | Fair | 5.3 |
| Participant | 297 | 1 | 20-Aug-97 | 407.0 | 1595.9 | 0 | 183.61 | 1.13 | 0.72 | 0.67 | Fair | 63.8 |
| Participant | 301 | 1 | 07-Aug-97 | 23.5 | 2701.5 | 0 | 21.69 | 1.03 | 0.62 | 0.55 | Fair | 27014.6 |
| Nonparticipant | 305 | 1 | 30-Sep-97 | 243.7 | 101.7 | 0 | 10.72 | 1.14 | 0.55 | 0.44 | Fair | 4.1 |
| Nonparticipant | 319 | 1 | 12-Aug-97 | 254.2 | 967.1 | 0 | 73.08 | 1.19 | 0.70 | 0.63 | Fair | 0.0 |
| Nonparticipant | 320 | 1 | 29-Aug-97 | 140.5 | 136.7 | 0 | 10.36 | 0.81 | 0.40 | 0.35 | Poor | 54.7 |
| Nonparticipant | 320 | 2 | 29-Aug-97 | 143.0 | 54.8 | 0 | 8.87 | 0.69 | 0.19 | 0.17 | Poor | 36.5 |
| Nonparticipant | 320 | 3 | 29-Aug-97 | 141.3 | 143.5 | 0 | 10.40 | 0.81 | 0.42 | 0.37 | Poor | 41.0 |
| Nonparticipant | 328 | 1 | 29-Aug-97 | 20.8 | 868.2 | 0 | 22.87 | 1.09 | 0.17 | 0.00 | Poor | 0.0 |
| Nonparticipant | 328 | 2 | 29-Aug-97 | 30.0 | 742.6 | 0 | 21.79 | 1.04 | 0.22 | 0.00 | Poor | 0.0 |
| Nonparticipant | 328 | 3 | 29-Aug-97 | 39.3 | 629.8 | 0 | 20.35 | 0.97 | 0.26 | 0.00 | Poor | 0.0 |

## *Appendix H*
## *Pump Test Data Summary*

### *Pump Runs*

| Participant Type | On-site Audit ID | Run | Date of Test | Total Load (Ft) | Gallons Per Minute | Field Measured GPM | KW Input | MtrLoad | PumpEff | OPE | OPE Rating | Yield |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nonparticipant | 328 | 4 | 29-Aug-97 | 48.5 | 417.2 | 0 | 16.42 | 0.78 | 0.26 | 0.00 | Poor | 0.0 |
| Nonparticipant | 329 | 1 | 12-Aug-97 | 95.6 | 2458.2 | 0 | 75.28 | 1.23 | 0.65 | 0.59 | Poor | 144.6 |
| Nonparticipant | 329 | 2 | 12-Aug-97 | 107.0 | 2341.0 | 0 | 75.47 | 1.23 | 0.69 | 0.63 | Fair | 161.4 |
| Nonparticipant | 329 | 3 | 12-Aug-97 | 117.0 | 2066.2 | 0 | 75.58 | 1.23 | 0.66 | 0.60 | Fair | 158.9 |
| Nonparticipant | 335 | 1 | 20-Aug-97 | 243.7 | 346.0 | 346 | 24.77 | 0.50 | 0.71 | 0.64 | Fair | 33.0 |
| Nonparticipant | 335 | 2 | 20-Aug-97 | 252.5 | 315.0 | 315 | 24.51 | 0.50 | 0.68 | 0.61 | Fair | 31.5 |
| Nonparticipant | 335 | 3 | 20-Aug-97 | 265.8 | 305.0 | 305 | 24.24 | 0.49 | 0.70 | 0.63 | Fair | 32.1 |
| Nonparticipant | 335 | 4 | 20-Aug-97 | 278.7 | 295.0 | 295 | 23.86 | 0.48 | 0.72 | 0.65 | Good | 34.7 |
| Nonparticipant | 338 | 1 | 21-Aug-97 | 228.1 | 1779.3 | 0 | 105.89 | 1.04 | 0.79 | 0.72 | Good | 177.9 |
| Nonparticipant | 338 | 2 | 21-Aug-97 | 206.0 | 1904.8 | 0 | 104.30 | 1.03 | 0.77 | 0.71 | Good | 173.2 |
| Nonparticipant | 338 | 3 | 21-Aug-97 | 165.1 | 2178.3 | 0 | 100.15 | 0.99 | 0.74 | 0.68 | Fair | 155.6 |
| Nonparticipant | 341 | 1 | 10-Sep-97 | 414.9 | 45.1 | 0 | 13.64 | 0.98 | 0.32 | 0.26 | Poor | 5.0 |
| Nonparticipant | 341 | 2 | 10-Sep-97 | 380.6 | 85.6 | 0 | 14.24 | 1.02 | 0.54 | 0.43 | Poor | 6.1 |
| Nonparticipant | 341 | 3 | 10-Sep-97 | 347.3 | 107.2 | 0 | 17.95 | 1.29 | 0.49 | 0.39 | Poor | 5.4 |
| Nonparticipant | 341 | 4 | 10-Sep-97 | 302.7 | 124.2 | 0 | 16.74 | 1.20 | 0.53 | 0.42 | Poor | 5.0 |
| Nonparticipant | 347 | 1 | 21-Aug-97 | 229.8 | 353.7 | 0 | 26.81 | 0.81 | 0.64 | 0.57 | Fair | 70.7 |
| Nonparticipant | 349 | 1 | 21-Aug-97 | 183.9 | 1053.5 | 0 | 51.25 | 1.04 | 0.79 | 0.71 | Good | 526.7 |
| Nonparticipant | 349 | 2 | 21-Aug-97 | 140.7 | 1249.5 | 0 | 50.61 | 1.02 | 0.72 | 0.65 | Good | 249.9 |
| Nonparticipant | 349 | 3 | 21-Aug-97 | 130.2 | 1396.5 | 0 | 49.73 | 1.01 | 0.76 | 0.69 | Good | 232.8 |
| Nonparticipant | 350 | 1 | 22-Aug-97 | 277.9 | 101.3 | 100 | 13.44 | 0.97 | 0.49 | 0.39 | Poor | 11.3 |
| Nonparticipant | 350 | 2 | 22-Aug-97 | 257.4 | 103.5 | 107 | 13.84 | 1.00 | 0.45 | 0.36 | Poor | 14.8 |
| Nonparticipant | 357 | 1 | 18-Sep-97 | 66.2 | 557.7 | 0 | 27.54 | 2.14 | 0.29 | 0.25 | Poor | 50.7 |
| Nonparticipant | 362.1 | 1 | 19-Sep-97 | 15.0 | 5320.0 | 5320 | 27.66 | 0.67 | 0.60 | 0.54 | Good | 0.0 |
| Nonparticipant | 362.2 | 1 | 19-Sep-97 | 16.0 | 24969.0 | 24969 | 96.22 | 0.79 | 0.85 | 0.78 | Good | 0.0 |
| Nonparticipant | 362.3 | 1 | 19-Sep-97 | 16.0 | 14167.0 | 14167 | 63.66 | 0.78 | 0.73 | 0.67 | Good | 0.0 |
| Nonparticipant | 362.4 | 1 | 19-Sep-97 | 16.0 | 13034.0 | 13034 | 62.31 | 0.76 | 0.69 | 0.63 | Good | 0.0 |
| Nonparticipant | 366 | 1 | 04-Sep-97 | 291.8 | 421.7 | 0 | 36.45 | 1.09 | 0.71 | 0.64 | Good | 84.3 |
| Nonparticipant | 375 | 1 | 04-Sep-97 | 124.2 | 72.9 | 0 | 8.44 | 1.19 | 0.26 | 0.20 | Poor | 0.0 |
| Nonparticipant | 377 | 1 | 05-Sep-97 | 28.3 | 5956.5 | 0 | 45.02 | 1.09 | 0.78 | 0.71 | Good | 0.0 |
| Nonparticipant | 381 | 1 | 05-Sep-97 | 7.5 | 5973.3 | 0 | 23.06 | 1.36 | 0.42 | 0.37 | Poor | 0.0 |
| Nonparticipant | 383 | 1 | 04-Sep-97 | 211.9 | 759.8 | 0 | 56.24 | 0.92 | 0.59 | 0.54 | Poor | 152.0 |
| Nonparticipant | 389 | 1 | 10-Sep-97 | 234.8 | 368.3 | 380 | 35.14 | 0.85 | 0.51 | 0.46 | Poor | 22.3 |
| Nonparticipant | 389 | 2 | 10-Sep-97 | 247.6 | 317.6 | 340 | 33.44 | 0.81 | 0.49 | 0.44 | Poor | 20.5 |
| Nonparticipant | 389 | 3 | 10-Sep-97 | 258.2 | 295.8 | 300 | 30.53 | 0.74 | 0.52 | 0.47 | Poor | 20.4 |

## *Appendix H*
## *Pump Test Data Summary*

### *Pump Runs*

| Participant Type | On-site Audit ID | Run | Date of Test | Total Load (Ft) | Gallons Per Minute | Field Measured GPM | KW Input | MtrLoad | PumpEff | OPE | OPE Rating | Yield |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nonparticipant | 389 | 4 | 10-Sep-97 | 265.7 | 226.0 | 220 | 21.69 | 0.52 | 0.58 | 0.52 | Poor | 21.5 |
| Nonparticipant | 394 | 1 | 11-Sep-97 | 205.1 | 2037.2 | 0 | 114.40 | 0.71 | 0.75 | 0.69 | Fair | 40.9 |
| Nonparticipant | 395 | 1 | 22-Aug-97 | 97.6 | 1301.6 | 0 | 40.58 | 1.22 | 0.66 | 0.59 | Fair | 276.9 |
| Nonparticipant | 395 | 2 | 22-Aug-97 | 136.2 | 845.2 | 0 | 38.61 | 1.16 | 0.63 | 0.56 | Fair | 497.2 |
| Nonparticipant | 396 | 1 | 20-Aug-97 | 147.0 | 746.1 | 0 | 40.94 | 1.23 | 0.56 | 0.50 | Poor | 93.3 |
| Nonparticipant | 397 | 1 | 20-Aug-97 | 202.5 | 1194.1 | 0 | 68.27 | 1.11 | 0.73 | 0.67 | Fair | 53.1 |
| Nonparticipant | 399 | 1 | 05-Sep-97 | 179.6 | 716.9 | 0 | 35.43 | 1.06 | 0.76 | 0.68 | Good | 37.7 |
| Nonparticipant | 399 | 2 | 05-Sep-97 | 141.7 | 868.1 | 0 | 37.49 | 1.13 | 0.69 | 0.62 | Good | 34.7 |
| Nonparticipant | 400 | 1 | 05-Sep-97 | 165.6 | 539.8 | 0 | 34.64 | 0.84 | 0.54 | 0.49 | Poor | 0.0 |
| Nonparticipant | 401 | 1 | 04-Sep-97 | 156.2 | 75.8 | 0 | 8.52 | 1.20 | 0.33 | 0.26 | Poor | 7.6 |
| Nonparticipant | 402 | 1 | 09-Sep-97 | 81.0 | 464.8 | 0 | 18.69 | 1.10 | 0.43 | 0.38 | Poor | 35.8 |
| Nonparticipant | 403 | 1 | 09-Sep-97 | 126.7 | 464.0 | 0 | 23.27 | 0.93 | 0.53 | 0.48 | Poor | 6.4 |
| Nonparticipant | 403 | 2 | 09-Sep-97 | 126.2 | 317.3 | 0 | 22.45 | 0.90 | 0.38 | 0.34 | Poor | 5.5 |
| Nonparticipant | 403 | 3 | 09-Sep-97 | 131.8 | 298.1 | 0 | 21.71 | 0.87 | 0.38 | 0.34 | Poor | 6.9 |
| Nonparticipant | 404 | 1 | 25-Sep-97 | 95.9 | 1076.8 | 0 | 29.03 | 1.16 | 0.75 | 0.67 | Good | 71.8 |
| Nonparticipant | 404 | 2 | 25-Sep-97 | 104.3 | 997.3 | 0 | 29.37 | 1.17 | 0.75 | 0.67 | Good | 76.7 |
| Nonparticipant | 404 | 3 | 25-Sep-97 | 112.5 | 924.3 | 0 | 31.13 | 1.24 | 0.70 | 0.63 | Good | 77.0 |
| Nonparticipant | 404 | 4 | 25-Sep-97 | 117.8 | 854.2 | 0 | 31.61 | 1.26 | 0.67 | 0.60 | Fair | 74.3 |
| Nonparticipant | 405 | 1 | 09-Sep-97 | 69.6 | 1439.6 | 0 | 25.06 | 1.00 | 0.84 | 0.75 | Good | 40.6 |
| Nonparticipant | 406 | 1 | 08-Oct-97 | 180.5 | 2190.9 | 0 | 108.75 | 1.07 | 0.75 | 0.69 | Fair | 54.1 |
| Nonparticipant | 408 | 1 | 03-Sep-97 | 175.7 | 326.7 | 0 | 28.63 | 1.06 | 0.46 | 0.38 | Poor | 40.8 |
| Nonparticipant | 409 | 1 | 08-Oct-97 | 3.0 | 729.5 | 0 | 15.92 | 1.24 | 0.03 | 0.00 | Poor | 0.0 |
| Nonparticipant | 410 | 1 | 10-Sep-97 | 124.2 | 1962.2 | 0 | 69.82 | 1.14 | 0.72 | 0.66 | Fair | 327.0 |
| Nonparticipant | 411 | 1 | 09-Sep-97 | 102.9 | 75.4 | 0 | 7.35 | 0.78 | 0.25 | 0.20 | Poor | 15.1 |
| Nonparticipant | 412 | 1 | 08-Oct-97 | 71.0 | 334.8 | 0 | 9.95 | 1.40 | 0.57 | 0.45 | Fair | 41.9 |
| Nonparticipant | 412 | 2 | 08-Oct-97 | 112.9 | 266.0 | 0 | 10.30 | 1.45 | 0.70 | 0.55 | Good | 38.0 |
| Nonparticipant | 412 | 3 | 08-Oct-97 | 148.9 | 237.8 | 0 | 10.25 | 1.44 | 0.83 | 0.65 | Good | 39.6 |
| Nonparticipant | 412 | 4 | 08-Oct-97 | 157.6 | 215.9 | 0 | 10.12 | 1.42 | 0.81 | 0.63 | Good | 39.3 |
| Nonparticipant | 414 | 1 | 25-Sep-97 | 55.8 | 221.5 | 0 | 9.02 | 0.96 | 0.32 | 0.26 | Poor | 18.5 |
| Nonparticipant | 414 | 2 | 25-Sep-97 | 82.2 | 205.0 | 0 | 9.44 | 1.01 | 0.42 | 0.34 | Poor | 15.8 |
| Nonparticipant | 414 | 3 | 25-Sep-97 | 114.5 | 182.1 | 0 | 9.76 | 1.04 | 0.51 | 0.40 | Poor | 14.0 |
| Nonparticipant | 414 | 4 | 25-Sep-97 | 174.9 | 108.2 | 0 | 9.45 | 1.01 | 0.47 | 0.38 | Poor | 9.8 |
| Nonparticipant | 415 | 1 | 25-Sep-97 | 147.0 | 2074.5 | 0 | 85.15 | 1.39 | 0.74 | 0.67 | Fair | 31.4 |
| Nonparticipant | 416 | 1 | 25-Sep-97 | 113.0 | 939.0 | 0 | 37.30 | 1.12 | 0.60 | 0.54 | Fair | 34.8 |

## *Appendix H*
## *Pump Test Data Summary*

### *Pump Runs*

| Participant Type | On-site Audit ID | Run | Date of Test | Total Load (Ft) | Gallons Per Minute | Field Measured GPM | KW Input | MtrLoad | PumpEff | OPE | OPE Rating | Yield |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nonparticipant | 417 | 1 | 19-Sep-97 | 80.9 | 10.4 | 0 | 2.17 | 0.33 | 0.09 | 0.00 | Poor | 0.0 |
| Nonparticipant | 418 | 1 | 17-Sep-97 | 19.2 | 1911.4 | 0 | 10.08 | 0.78 | 0.79 | 0.68 | Good | 0.0 |
| Nonparticipant | 420 | 1 | 23-Sep-97 | 82.0 | 2416.4 | 2388.278 | 59.10 | 0.96 | 0.69 | 0.63 | Fair | 62.0 |
| Nonparticipant | 420 | 2 | 23-Sep-97 | 93.2 | 2233.0 | 2235.429 | 59.80 | 0.97 | 0.72 | 0.66 | Fair | 65.7 |
| Nonparticipant | 420 | 3 | 23-Sep-97 | 111.3 | 2030.3 | 1973.764 | 60.11 | 0.98 | 0.78 | 0.71 | Good | 70.0 |
| Nonparticipant | 421 | 1 | 23-Sep-97 | 109.3 | 2471.1 | 1997.957 | 123.32 | 2.01 | 0.45 | 0.41 | Poor | 0.0 |
| Nonparticipant | 422 | 1 | 24-Sep-97 | 37.3 | 2020.6 | 0 | 44.01 | 1.06 | 0.36 | 0.00 | Poor | 0.0 |
| Nonparticipant | 422 | 2 | 24-Sep-97 | 60.4 | 1512.2 | 0 | 41.12 | 0.99 | 0.46 | 0.00 | Poor | 0.0 |
| Nonparticipant | 422 | 3 | 24-Sep-97 | 78.9 | 1100.4 | 0 | 39.37 | 0.95 | 0.46 | 0.00 | Poor | 0.0 |
| Nonparticipant | 423 | 1 | 24-Sep-97 | 28.7 | 1827.6 | 0 | 39.43 | 0.95 | 0.28 | 0.00 | Poor | 0.0 |
| Nonparticipant | 423 | 2 | 24-Sep-97 | 47.2 | 1518.7 | 0 | 37.77 | 0.91 | 0.40 | 0.00 | Poor | 0.0 |
| Nonparticipant | 423 | 3 | 24-Sep-97 | 70.3 | 971.7 | 0 | 37.06 | 0.90 | 0.39 | 0.00 | Poor | 0.0 |
| Nonparticipant | 424 | 1 | 24-Sep-97 | 29.7 | 2068.9 | 0 | 38.08 | 0.92 | 0.34 | 0.00 | Poor | 0.0 |
| Nonparticipant | 424 | 2 | 24-Sep-97 | 48.2 | 1660.3 | 0 | 36.00 | 0.87 | 0.46 | 0.00 | Poor | 0.0 |
| Nonparticipant | 424 | 3 | 24-Sep-97 | 71.3 | 1113.3 | 0 | 33.97 | 0.82 | 0.49 | 0.00 | Poor | 0.0 |
| Nonparticipant | 425 | 1 | 23-Sep-97 | 164.5 | 523.3 | 0 | 34.41 | 0.83 | 0.52 | 0.47 | Poor | 19.0 |
| Nonparticipant | 425 | 2 | 23-Sep-97 | 174.6 | 517.7 | 0 | 34.66 | 0.84 | 0.55 | 0.49 | Poor | 19.9 |
| Nonparticipant | 425 | 3 | 23-Sep-97 | 185.6 | 508.0 | 0 | 35.13 | 0.85 | 0.56 | 0.51 | Poor | 19.9 |
| Nonparticipant | 425 | 4 | 23-Sep-97 | 198.5 | 498.3 | 0 | 35.39 | 0.85 | 0.58 | 0.53 | Poor | 20.3 |
| Nonparticipant | 426 | 1 | 23-Sep-97 | 116.0 | 1307.1 | 0 | 70.95 | 1.16 | 0.44 | 0.40 | Poor | 54.0 |
| Nonparticipant | 427 | 1 | 23-Sep-97 | 356.5 | 1518.3 | 0 | 153.74 | 1.26 | 0.72 | 0.66 | Fair | 138.0 |
| Nonparticipant | 429 | 1 | 24-Sep-97 | 756.1 | 933.3 | 0 | 176.39 | 0.87 | 0.82 | 0.75 | Good | 103.7 |
| Nonparticipant | 429 | 2 | 24-Sep-97 | 764.7 | 729.4 | 0 | 159.96 | 0.79 | 0.71 | 0.66 | Fair | 121.6 |
| Nonparticipant | 429 | 3 | 24-Sep-97 | 784.8 | 609.0 | 0 | 136.08 | 0.67 | 0.72 | 0.66 | Fair | 203.0 |
| Nonparticipant | 430 | 1 | 24-Sep-97 | 554.2 | 181.0 | 0 | 38.39 | 0.87 | 0.58 | 0.49 | Fair | 15.1 |
| Nonparticipant | 430 | 2 | 24-Sep-97 | 571.7 | 172.2 | 0 | 37.83 | 0.86 | 0.58 | 0.49 | Fair | 15.7 |
| Nonparticipant | 430 | 3 | 24-Sep-97 | 582.7 | 169.6 | 0 | 37.56 | 0.86 | 0.58 | 0.50 | Fair | 16.2 |
| Nonparticipant | 430 | 4 | 24-Sep-97 | 593.8 | 162.1 | 0 | 37.30 | 0.85 | 0.57 | 0.49 | Fair | 16.2 |
| Nonparticipant | 431 | 1 | 17-Sep-97 | 12.7 | 1809.4 | 0 | 9.39 | 0.73 | 0.53 | 0.46 | Fair | 0.0 |
| Nonparticipant | 432 | 1 | 17-Sep-97 | 26.8 | 817.7 | 0 | 15.07 | 1.17 | 0.31 | 0.27 | Poor | 0.0 |
| Nonparticipant | 433 | 1 | 17-Sep-97 | 27.3 | 976.0 | 0 | 15.45 | 1.20 | 0.37 | 0.32 | Poor | 0.0 |
| Nonparticipant | 434 | 1 | 17-Sep-97 | 54.6 | 4029.7 | 0 | 69.34 | 0.85 | 0.65 | 0.60 | Poor | 0.0 |
| Nonparticipant | 434 | 2 | 17-Sep-97 | 63.8 | 3649.7 | 0 | 67.10 | 0.82 | 0.72 | 0.65 | Fair | 0.0 |
| Nonparticipant | 434 | 3 | 17-Sep-97 | 70.8 | 2332.1 | 0 | 59.30 | 0.73 | 0.57 | 0.52 | Poor | 0.0 |

## *Appendix H*
## *Pump Test Data Summary*

### *Pump Runs*

| Participant Type | On-site Audit ID | Run | Date of Test | Total Load (Ft) | Gallons Per Minute | Field Measured GPM | KW Input | MtrLoad | PumpEff | OPE | OPE Rating | Yield |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nonparticipant | 435 | 1 | 23-Sep-97 | 371.7 | 1355.7 | 0 | 144.88 | 1.19 | 0.71 | 0.66 | Fair | 65.2 |
| Nonparticipant | 435 | 2 | 23-Sep-97 | 385.6 | 1343.4 | 0 | 145.19 | 1.19 | 0.73 | 0.67 | Fair | 72.6 |
| Nonparticipant | 435 | 3 | 23-Sep-97 | 394.9 | 1325.2 | 0 | 145.41 | 1.19 | 0.74 | 0.68 | Fair | 81.8 |
| Nonparticipant | 436 | 1 | 23-Sep-97 | 359.0 | 1518.3 | 0 | 153.74 | 1.26 | 0.73 | 0.67 | Fair | 126.5 |
| Nonparticipant | 437 | 1 | 01-Oct-97 | 330.9 | 1879.5 | 0 | 226.60 | 1.12 | 0.56 | 0.52 | Poor | 47.0 |
| Nonparticipant | 438 | 1 | 30-Sep-97 | 300.0 | 1786.5 | 0 | 164.83 | 1.02 | 0.67 | 0.61 | Fair | 55.8 |
| Nonparticipant | 438 | 2 | 30-Sep-97 | 316.5 | 1745.2 | 0 | 165.05 | 1.02 | 0.69 | 0.63 | Fair | 54.5 |
| Nonparticipant | 438 | 3 | 30-Sep-97 | 335.0 | 1684.2 | 0 | 166.07 | 1.02 | 0.70 | 0.64 | Fair | 52.6 |
| Nonparticipant | 439 | 1 | 30-Sep-97 | 352.5 | 949.8 | 0 | 217.41 | 0.89 | 0.32 | 0.29 | Poor | 63.3 |
| Nonparticipant | 440 | 1 | 30-Sep-97 | 115.8 | 5340.0 | 5340 | 154.31 | 0.95 | 0.82 | 0.75 | Good | 0.0 |
| Nonparticipant | 441 | 1 | 08-Oct-97 | 217.0 | 1004.3 | 0 | 63.80 | 1.04 | 0.71 | 0.64 | Fair | 12.5 |
| Nonparticipant | 442 | 1 | 08-Oct-97 | 54.5 | 993.4 | 0 | 18.11 | 1.07 | 0.64 | 0.56 | Fair | 94.6 |
| Nonparticipant | 442 | 2 | 08-Oct-97 | 59.9 | 909.4 | 0 | 17.14 | 1.01 | 0.68 | 0.60 | Good | 109.6 |
| Nonparticipant | 442 | 3 | 08-Oct-97 | 71.4 | 635.7 | 0 | 15.40 | 0.91 | 0.63 | 0.56 | Fair | 105.9 |
| Nonparticipant | 442 | 4 | 08-Oct-97 | 80.0 | 464.0 | 0 | 13.56 | 0.80 | 0.59 | 0.52 | Fair | 154.7 |
| Nonparticipant | 443 | 1 | 18-Sep-97 | 166.9 | 289.6 | 0 | 19.51 | 1.15 | 0.53 | 0.47 | Poor | 19.4 |
| Nonparticipant | 444 | 1 | 18-Sep-97 | 11.6 | 442.3 | 0 | 17.08 | 1.01 | 0.06 | 0.00 | Poor | 0.0 |

## *Appendix H*
## *Pump Test Data Summary*

*Pump Runs*

| Participant Type | On-site Audit ID | kWhr/MG | kWhr/AF | Horsepower Input | Brake Horsepower | Water Horsepower | Quality Rating |
|---|---|---|---|---|---|---|---|
| Participant | 202 | 1750.1 | 570.5 | 41.8 | 37.3 | 21.0 | Poor |
| Participant | 203 | 1705.7 | 556.1 | 276.0 | 254.5 | 228.8 | Fair |
| Participant | 205 | 685.4 | 223.5 | 27.1 | 23.8 | 14.6 | Fair |
| Participant | 206 | 753.3 | 245.6 | 47.7 | 42.7 | 29.6 | Poor |
| Participant | 207 | 784.2 | 255.7 | 80.0 | 72.4 | 46.3 | Good |
| Participant | 207 | 771.9 | 251.6 | 81.5 | 73.8 | 44.8 | Good |
| Participant | 207 | 744.6 | 242.7 | 81.8 | 74.1 | 43.4 | Good |
| Participant | 208 | 493.5 | 160.9 | 48.5 | 43.5 | 4.3 | Good |
| Participant | 209 | 1310.7 | 427.3 | 38.0 | 34.1 | 10.7 | Poor |
| Participant | 212 | 1729.5 | 563.8 | 50.9 | 43.3 | 26.0 | Good |
| Participant | 213 | 2017.6 | 657.7 | 150.5 | 132.3 | 95.9 | Fair |
| Participant | 213 | 1857.1 | 605.4 | 152.2 | 133.8 | 96.9 | Fair |
| Participant | 213 | 1794.9 | 585.1 | 151.9 | 133.5 | 97.2 | Fair |
| Participant | 216 | 1029.7 | 335.7 | 38.0 | 33.9 | 7.4 | Poor |
| Participant | 216 | 987.7 | 322.0 | 38.4 | 34.3 | 6.1 | Poor |
| Participant | 216 | 943.4 | 307.5 | 38.6 | 34.5 | 5.3 | Poor |
| Participant | 221 | 512.5 | 167.1 | 40.9 | 36.5 | 26.6 | Good |
| Participant | 222 | 487.9 | 159.0 | 38.0 | 33.9 | 23.1 | Good |
| Participant | 229 | 885.5 | 288.7 | 95.4 | 87.2 | 53.7 | Good |
| Participant | 230 | 962.0 | 313.6 | 119.7 | 110.0 | 67.2 | Good |
| Participant | 231 | 1165.4 | 379.9 | 192.6 | 177.0 | 135.4 | Fair |
| Participant | 231 | 1200.6 | 391.4 | 193.4 | 177.8 | 138.0 | Fair |
| Participant | 231 | 1234.6 | 402.5 | 193.0 | 177.3 | 139.9 | Fair |
| Participant | 231 | 1334.1 | 434.9 | 193.2 | 177.6 | 137.2 | Fair |
| Participant | 232 | 105.1 | 34.2 | 209.5 | 192.7 | 168.8 | Poor |
| Participant | 232 | 122.2 | 39.8 | 229.6 | 211.3 | 193.2 | Poor |
| Participant | 232 | 145.1 | 47.3 | 248.0 | 228.2 | 200.6 | Poor |
| Participant | 233 | 189.4 | 61.8 | 288.2 | 265.1 | 210.4 | Poor |
| Participant | 233 | 212.5 | 69.3 | 298.9 | 275.0 | 209.9 | Poor |
| Participant | 233 | 225.7 | 73.6 | 301.5 | 277.4 | 218.7 | Poor |
| Participant | 235 | 1886.7 | 615.1 | 90.1 | 82.1 | 45.9 | Poor |
| Participant | 235 | 1457.5 | 475.2 | 91.0 | 82.9 | 58.1 | Poor |
| Participant | 235 | 1357.5 | 442.6 | 92.2 | 84.0 | 56.8 | Poor |
| Participant | 236 | 1415.1 | 461.3 | 19.5 | 17.0 | 10.2 | Good |

## *Pump Runs*

| Participant Type | On-site Audit ID | kWhr/MG | kWhr/AF | Horsepower Input | Brake Horsepower | Water Horsepower | Quality Rating |
|---|---|---|---|---|---|---|---|
| Participant | 236 | 1269.3 | 413.8 | 19.7 | 17.1 | 10.5 | Good |
| Participant | 236 | 1117.3 | 364.2 | 20.3 | 17.6 | 10.0 | Good |
| Participant | 237 | 655.0 | 213.5 | 68.8 | 62.7 | 43.3 | Good |
| Participant | 238 | 852.6 | 277.9 | 308.7 | 284.0 | 214.2 | CustMeter |
| Participant | 238 | 920.3 | 300.0 | 316.6 | 291.3 | 219.7 | CustMeter |
| Participant | 238 | 940.7 | 306.7 | 309.9 | 285.2 | 223.6 | CustMeter |
| Participant | 238 | 973.6 | 317.4 | 303.2 | 278.9 | 220.3 | CustMeter |
| Participant | 240 | 130.5 | 42.5 | 28.0 | 24.8 | 14.5 | Good |
| Participant | 241 | 1512.7 | 493.2 | 194.3 | 178.5 | 91.1 | Poor |
| Participant | 242.1 | 691.0 | 225.3 | 76.9 | 70.1 | 44.6 | Fair |
| Participant | 242.1 | 791.8 | 258.1 | 76.2 | 69.4 | 50.4 | Fair |
| Participant | 242.1 | 909.7 | 296.6 | 73.3 | 66.8 | 51.6 | Fair |
| Participant | 242.2 | 1003.9 | 327.3 | 74.4 | 67.4 | 46.9 | Fair |
| Participant | 242.2 | 858.8 | 280.0 | 75.3 | 68.1 | 52.2 | Fair |
| Participant | 242.2 | 781.1 | 254.7 | 76.7 | 69.5 | 52.2 | Fair |
| Participant | 243 | 752.1 | 245.2 | 160.3 | 147.3 | 95.7 | CustMeter |
| Participant | 243 | 833.1 | 271.6 | 165.5 | 152.1 | 110.8 | CustMeter |
| Participant | 243 | 965.1 | 314.6 | 156.9 | 144.2 | 103.6 | CustMeter |
| Participant | 244 | 681.4 | 222.2 | 78.7 | 71.7 | 47.3 | CustMeter |
| Participant | 244 | 1104.0 | 359.9 | 95.7 | 87.2 | 47.4 | CustMeter |
| Participant | 244 | 1119.8 | 365.1 | 72.8 | 66.3 | 41.7 | CustMeter |
| Participant | 245.1 | 577.9 | 188.4 | 21.2 | 18.4 | 11.8 | Fair |
| Participant | 245.1 | 620.7 | 202.4 | 21.0 | 18.3 | 12.1 | Fair |
| Participant | 245.1 | 679.2 | 221.4 | 20.6 | 17.9 | 11.8 | Fair |
| Participant | 245.1 | 746.1 | 243.2 | 19.1 | 16.6 | 10.8 | Fair |
| Participant | 245.2 | 860.7 | 280.6 | 11.2 | 9.6 | 5.8 | Fair |
| Participant | 245.2 | 868.3 | 283.1 | 10.0 | 8.6 | 5.5 | Fair |
| Participant | 245.2 | 2974.1 | 969.6 | 9.9 | 8.5 | 1.8 | Fair |
| Participant | 247 | 436.2 | 142.2 | 21.5 | 18.9 | 13.5 | Poor |
| Participant | 247 | 483.5 | 157.6 | 21.9 | 19.3 | 14.1 | Poor |
| Participant | 247 | 564.0 | 183.9 | 21.6 | 19.0 | 13.6 | Poor |
| Participant | 247 | 705.6 | 230.0 | 20.9 | 18.4 | 11.6 | Poor |
| Participant | 248.1 | 503.9 | 164.3 | 25.5 | 22.4 | 11.7 | Fair |
| Participant | 248.1 | 507.0 | 165.3 | 25.6 | 22.5 | 13.2 | Fair |

## *Pump Runs*

| Participant Type | On-site Audit ID | kWhr/MG | kWhr/AF | Horsepower Input | Brake Horsepower | Water Horsepower | Quality Rating |
|---|---|---|---|---|---|---|---|
| Participant | 248.1 | 557.0 | 181.6 | 25.8 | 22.7 | 14.1 | Fair |
| Participant | 248.2 | 357.4 | 116.5 | 83.2 | 75.0 | 63.2 | Fair |
| Participant | 250 | 1594.0 | 519.7 | 82.1 | 75.0 | 17.8 | Poor |
| Participant | 250 | 1459.2 | 475.7 | 83.5 | 76.4 | 24.3 | Poor |
| Participant | 252 | 105.3 | 34.3 | 143.2 | 131.6 | 73.2 | Fair |
| Participant | 255 | 79.1 | 25.8 | 235.9 | 217.0 | 149.7 | Poor |
| Participant | 257.1 | 409.0 | 133.3 | 61.3 | 55.2 | 47.5 | Fair |
| Participant | 257.1 | 453.5 | 147.8 | 63.2 | 56.9 | 50.2 | Fair |
| Participant | 257.1 | 484.9 | 158.1 | 64.2 | 57.8 | 50.6 | Fair |
| Participant | 257.1 | 521.7 | 170.1 | 64.8 | 58.4 | 50.2 | Fair |
| Participant | 257.2 | 376.4 | 122.7 | 30.5 | 27.2 | 19.6 | Fair |
| Participant | 257.2 | 399.6 | 130.3 | 31.1 | 27.8 | 21.0 | Fair |
| Participant | 257.2 | 417.9 | 136.2 | 31.9 | 28.5 | 22.9 | Fair |
| Participant | 257.2 | 483.5 | 157.6 | 32.8 | 29.3 | 25.2 | Fair |
| Participant | 257.3 | 474.1 | 154.6 | 63.7 | 57.4 | 45.1 | Fair |
| Participant | 257.3 | 521.2 | 169.9 | 64.8 | 58.4 | 45.8 | Fair |
| Participant | 257.3 | 567.4 | 185.0 | 65.3 | 58.9 | 47.0 | Fair |
| Participant | 257.3 | 622.8 | 203.0 | 64.3 | 57.9 | 45.1 | Fair |
| Participant | 258.1 | 383.8 | 125.1 | 59.3 | 53.4 | 43.0 | Fair |
| Participant | 258.1 | 432.4 | 141.0 | 61.4 | 55.3 | 46.8 | Fair |
| Participant | 258.1 | 501.0 | 163.3 | 63.9 | 57.6 | 48.5 | Fair |
| Participant | 258.1 | 611.7 | 199.4 | 63.1 | 56.9 | 46.0 | Fair |
| Participant | 258.2 | 365.5 | 119.2 | 31.6 | 28.2 | 21.6 | Fair |
| Participant | 258.2 | 391.4 | 127.6 | 32.0 | 28.6 | 23.4 | Fair |
| Participant | 258.2 | 442.5 | 144.3 | 33.4 | 29.8 | 26.5 | Fair |
| Participant | 258.2 | 493.0 | 160.7 | 33.9 | 30.3 | 27.6 | Fair |
| Participant | 258.3 | 370.5 | 120.8 | 58.8 | 53.0 | 44.2 | Fair |
| Participant | 258.3 | 423.7 | 138.1 | 60.5 | 54.5 | 46.0 | Fair |
| Participant | 258.3 | 469.3 | 153.0 | 62.0 | 55.9 | 48.3 | Fair |
| Participant | 258.3 | 565.5 | 184.4 | 63.0 | 56.7 | 47.2 | Fair |
| Participant | 259.1 | 512.3 | 167.0 | 60.6 | 54.6 | 46.7 | Fair |
| Participant | 259.1 | 536.6 | 174.9 | 60.5 | 54.5 | 47.0 | Fair |
| Participant | 259.1 | 580.3 | 189.2 | 59.6 | 53.7 | 45.0 | Fair |
| Participant | 259.1 | 657.1 | 214.2 | 56.9 | 51.3 | 40.8 | Fair |

## *Pump Runs*

| Participant Type | On-site Audit ID | kWhr/MG | kWhr/AF | Horsepower Input | Brake Horsepower | Water Horsepower | Quality Rating |
|---|---|---|---|---|---|---|---|
| Participant | 259.2 | 495.7 | 161.6 | 63.7 | 57.6 | 47.9 | Fair |
| Participant | 259.2 | 532.2 | 173.5 | 65.0 | 58.8 | 49.1 | Fair |
| Participant | 259.2 | 577.3 | 188.2 | 65.7 | 59.4 | 49.0 | Fair |
| Participant | 259.2 | 629.0 | 205.1 | 64.9 | 58.7 | 47.4 | Fair |
| Participant | 260.1 | 384.3 | 125.3 | 60.6 | 54.6 | 44.5 | Fair |
| Participant | 260.1 | 413.9 | 134.9 | 61.6 | 55.5 | 47.3 | Fair |
| Participant | 260.1 | 458.3 | 149.4 | 62.9 | 56.7 | 47.6 | Fair |
| Participant | 260.1 | 504.5 | 164.5 | 64.4 | 58.0 | 51.7 | Fair |
| Participant | 260.2 | 364.9 | 119.0 | 27.1 | 24.2 | 17.1 | Fair |
| Participant | 260.2 | 453.8 | 147.9 | 28.4 | 25.3 | 19.4 | Fair |
| Participant | 260.2 | 499.2 | 162.8 | 28.7 | 25.6 | 20.4 | Fair |
| Participant | 260.2 | 540.4 | 176.2 | 29.1 | 26.0 | 21.8 | Fair |
| Participant | 260.2 | 579.3 | 188.9 | 28.9 | 25.8 | 22.4 | Fair |
| Participant | 262 | 782.4 | 255.1 | 30.0 | 26.8 | 15.1 | Poor |
| Participant | 262 | 712.1 | 232.2 | 34.7 | 31.0 | 18.5 | Good |
| Participant | 262 | 680.5 | 221.8 | 37.0 | 33.0 | 20.1 | Good |
| Participant | 263 | 1823.3 | 594.4 | 309.4 | 285.3 | 2.5 | Poor |
| Participant | 263 | 1904.5 | 620.9 | 309.4 | 285.3 | 11.8 | Poor |
| Participant | 263 | 1925.3 | 627.7 | 309.7 | 285.6 | 26.8 | Poor |
| Participant | 265 | 117.5 | 38.3 | 384.0 | 354.1 | 158.0 | CustMeter |
| Participant | 268 | 1331.8 | 434.2 | 147.8 | 135.8 | 98.9 | Fair |
| Participant | 270 | 827.4 | 269.7 | 1903.4 | 1751.1 | 1699.3 | Poor (OPE High) |
| Participant | 271 | 500.2 | 163.1 | 635.8 | 575.4 | 471.0 | CustMeter |
| Participant | 273 | 104.4 | 34.0 | 40.6 | 36.3 | 26.3 | Poor |
| Participant | 275 | 1147.2 | 374.0 | 20.5 | 18.2 | 11.6 | Poor |
| Participant | 275 | 823.5 | 268.5 | 27.5 | 24.4 | 19.8 | Good |
| Participant | 275 | 703.0 | 229.2 | 29.1 | 25.9 | 20.9 | Good |
| Participant | 276 | 2638.9 | 860.3 | 35.9 | 32.4 | 15.5 | Fair |
| Participant | 276 | 1871.7 | 610.2 | 47.8 | 43.1 | 27.4 | Fair |
| Participant | 276 | 1964.6 | 640.5 | 57.0 | 51.4 | 29.4 | Fair |
| Participant | 280 | 1080.7 | 352.3 | 127.8 | 116.8 | 89.1 | Fair |
| Participant | 282 | 521.7 | 170.1 | 64.2 | 58.1 | 49.1 | Fair |
| Participant | 283 | 825.7 | 269.2 | 30.6 | 27.4 | 18.4 | Fair |
| Participant | 283 | 770.9 | 251.3 | 31.5 | 28.1 | 17.3 | Fair |

## *Appendix H*
## *Pump Test Data Summary*

*Pump Runs*

| Participant Type | On-site Audit ID | kWhr/MG | kWhr/AF | Horsepower Input | Brake Horsepower | Water Horsepower | Quality Rating |
|---|---|---|---|---|---|---|---|
| Participant | 283 | 783.4 | 255.4 | 31.3 | 27.9 | 18.1 | Fair |
| Participant | 287 | 909.4 | 296.5 | 53.6 | 48.3 | 33.6 | Good |
| Participant | 287 | 978.5 | 319.0 | 48.7 | 43.8 | 32.6 | Good |
| Participant | 287 | 1222.9 | 398.7 | 40.9 | 36.8 | 24.5 | Good |
| Participant | 288 | 1437.2 | 468.5 | 169.7 | 155.9 | 118.3 | Fair |
| Participant | 288 | 1480.1 | 482.5 | 168.6 | 155.0 | 123.2 | Fair |
| Participant | 288 | 1637.2 | 533.7 | 168.3 | 154.6 | 120.8 | Fair |
| Participant | 289 | 2384.8 | 777.5 | 21.7 | 17.9 | 7.3 | Good |
| Participant | 289 | 1867.6 | 608.8 | 22.0 | 18.1 | 8.6 | Good |
| Participant | 289 | 1443.4 | 470.6 | 22.1 | 18.2 | 9.4 | Good |
| Participant | 290 | 919.8 | 299.8 | 154.3 | 141.8 | 98.5 | Good |
| Participant | 290 | 1073.4 | 349.9 | 156.2 | 143.5 | 93.7 | Good |
| Participant | 290 | 1107.8 | 361.1 | 154.3 | 141.8 | 94.4 | Good |
| Participant | 291 | 847.1 | 276.2 | 88.9 | 81.0 | 76.2 | Poor |
| Participant | 291 | 1083.4 | 353.2 | 76.1 | 69.3 | 57.8 | Poor |
| Participant | 291 | 1670.3 | 544.5 | 67.5 | 61.5 | 34.7 | Poor |
| Participant | 292 | 1727.6 | 563.2 | 142.2 | 130.0 | 0.3 | Poor |
| Participant | 292 | 1783.3 | 581.4 | 142.3 | 130.1 | 4.1 | Poor |
| Participant | 292 | 1819.4 | 593.1 | 141.6 | 129.4 | 6.8 | Poor |
| Participant | 292 | 1886.5 | 615.0 | 138.9 | 127.0 | 9.1 | Poor |
| Participant | 293 | 2635.3 | 859.1 | 193.5 | 177.8 | 125.3 | Fair |
| Participant | 293 | 2699.0 | 879.9 | 192.5 | 177.0 | 123.3 | Fair |
| Participant | 293 | 2750.7 | 896.8 | 192.8 | 177.2 | 123.2 | Fair |
| Participant | 293 | 2771.2 | 903.4 | 188.1 | 172.9 | 121.8 | Fair |
| Participant | 297 | 1916.7 | 624.9 | 246.1 | 226.4 | 164.0 | Fair |
| Participant | 301 | 133.7 | 43.6 | 29.1 | 25.8 | 16.0 | Good |
| Nonparticipant | 305 | 1755.3 | 572.2 | 14.4 | 11.4 | 6.3 | Fair |
| Nonparticipant | 319 | 1258.9 | 410.4 | 98.0 | 89.2 | 62.1 | Fair |
| Nonparticipant | 320 | 1262.0 | 411.4 | 13.9 | 12.1 | 4.9 | Poor |
| Nonparticipant | 320 | 2696.8 | 879.2 | 11.9 | 10.3 | 2.0 | Poor |
| Nonparticipant | 320 | 1207.6 | 393.7 | 13.9 | 12.1 | 5.1 | Poor |
| Nonparticipant | 328 | 438.8 | 143.0 | 30.7 | 27.2 | 4.6 | Poor |
| Nonparticipant | 328 | 488.9 | 159.4 | 29.2 | 25.9 | 5.6 | Poor |
| Nonparticipant | 328 | 538.2 | 175.5 | 27.3 | 24.2 | 6.2 | Poor |

## *Pump Runs*

| Participant Type | On-site Audit ID | kWhr/MG | kWhr/AF | Horsepower Input | Brake Horsepower | Water Horsepower | Quality Rating |
|---|---|---|---|---|---|---|---|
| Nonparticipant | 328 | 655.9 | 213.8 | 22.0 | 19.6 | 5.1 | Poor |
| Nonparticipant | 329 | 510.2 | 166.3 | 100.9 | 91.9 | 59.4 | Fair |
| Nonparticipant | 329 | 537.1 | 175.1 | 101.2 | 92.2 | 63.2 | Fair |
| Nonparticipant | 329 | 609.4 | 198.7 | 101.3 | 92.3 | 61.1 | Fair |
| Nonparticipant | 335 | 1192.5 | 388.7 | 33.2 | 30.0 | 21.3 | CustMeter |
| Nonparticipant | 335 | 1296.2 | 422.6 | 32.9 | 29.7 | 20.1 | CustMeter |
| Nonparticipant | 335 | 1324.0 | 431.6 | 32.5 | 29.4 | 20.5 | CustMeter |
| Nonparticipant | 335 | 1347.2 | 439.2 | 32.0 | 28.9 | 20.8 | CustMeter |
| Nonparticipant | 338 | 991.4 | 323.2 | 141.9 | 130.4 | 102.5 | Good |
| Nonparticipant | 338 | 912.2 | 297.4 | 139.8 | 128.5 | 99.1 | Good |
| Nonparticipant | 338 | 765.9 | 249.7 | 134.2 | 123.4 | 90.8 | Good |
| Nonparticipant | 341 | 5039.3 | 1642.8 | 18.3 | 14.7 | 4.7 | Poor |
| Nonparticipant | 341 | 2773.3 | 904.1 | 19.1 | 15.4 | 8.2 | Fair |
| Nonparticipant | 341 | 2790.6 | 909.7 | 24.1 | 19.4 | 9.4 | Fair |
| Nonparticipant | 341 | 2245.0 | 731.9 | 22.4 | 18.1 | 9.5 | Fair |
| Nonparticipant | 347 | 1263.0 | 411.8 | 35.9 | 32.2 | 20.5 | Good |
| Nonparticipant | 349 | 810.4 | 264.2 | 68.7 | 62.2 | 48.9 | Fair |
| Nonparticipant | 349 | 674.7 | 220.0 | 67.8 | 61.4 | 44.4 | Fair |
| Nonparticipant | 349 | 593.3 | 193.4 | 66.7 | 60.3 | 45.9 | Fair |
| Nonparticipant | 350 | 2211.2 | 720.9 | 18.0 | 14.5 | 7.1 | Fair |
| Nonparticipant | 350 | 2226.1 | 725.7 | 18.5 | 14.9 | 6.7 | Fair |
| Nonparticipant | 357 | 822.6 | 268.2 | 36.9 | 32.1 | 9.3 | Good |
| Nonparticipant | 362.1 | 86.6 | 28.2 | 37.1 | 33.4 | 20.2 | Fair |
| Nonparticipant | 362.2 | 64.2 | 20.9 | 129.0 | 118.5 | 100.9 | Fair |
| Nonparticipant | 362.3 | 74.9 | 24.4 | 85.3 | 78.0 | 57.2 | Fair |
| Nonparticipant | 362.4 | 79.6 | 26.0 | 83.5 | 76.3 | 52.7 | Fair |
| Nonparticipant | 366 | 1440.2 | 469.5 | 48.9 | 43.8 | 31.1 | Poor |
| Nonparticipant | 375 | 1928.0 | 628.5 | 11.3 | 8.9 | 2.3 | Fair |
| Nonparticipant | 377 | 125.9 | 41.0 | 60.3 | 54.4 | 42.6 | Good |
| Nonparticipant | 381 | 64.3 | 21.0 | 30.9 | 27.2 | 11.3 | Fair |
| Nonparticipant | 383 | 1233.3 | 402.1 | 75.4 | 68.7 | 40.7 | Good |
| Nonparticipant | 389 | 1589.2 | 518.1 | 47.1 | 42.4 | 21.8 | Fair |
| Nonparticipant | 389 | 1753.7 | 571.7 | 44.8 | 40.4 | 19.9 | Fair |
| Nonparticipant | 389 | 1719.3 | 560.5 | 40.9 | 36.9 | 19.3 | Fair |

## *Pump Runs*

| Participant Type | On-site Audit ID | kWhr/MG | kWhr/AF | Horsepower Input | Brake Horsepower | Water Horsepower | Quality Rating |
|---|---|---|---|---|---|---|---|
| Nonparticipant | 389 | 1598.6 | 521.2 | 29.1 | 26.2 | 15.2 | Fair |
| Nonparticipant | 394 | 935.5 | 305.0 | 153.4 | 141.1 | 105.5 | Poor |
| Nonparticipant | 395 | 519.4 | 169.3 | 54.4 | 48.7 | 32.1 | Poor |
| Nonparticipant | 395 | 761.0 | 248.1 | 51.8 | 46.4 | 29.1 | Poor |
| Nonparticipant | 396 | 914.0 | 298.0 | 54.9 | 49.2 | 27.7 | Fair |
| Nonparticipant | 397 | 952.5 | 310.5 | 91.5 | 83.4 | 61.1 | Fair |
| Nonparticipant | 399 | 823.3 | 268.4 | 47.5 | 42.6 | 32.5 | Good |
| Nonparticipant | 399 | 719.5 | 234.5 | 50.3 | 45.0 | 31.1 | Good |
| Nonparticipant | 400 | 1069.1 | 348.5 | 46.4 | 41.8 | 22.6 | Good |
| Nonparticipant | 401 | 1872.2 | 610.4 | 11.4 | 9.0 | 3.0 | Good |
| Nonparticipant | 402 | 669.9 | 218.4 | 25.1 | 22.0 | 9.5 | Fair |
| Nonparticipant | 403 | 835.4 | 272.3 | 31.2 | 27.9 | 14.8 | Fair |
| Nonparticipant | 403 | 1178.8 | 384.3 | 30.1 | 26.9 | 10.1 | Fair |
| Nonparticipant | 403 | 1213.5 | 395.6 | 29.1 | 26.0 | 9.9 | Fair |
| Nonparticipant | 404 | 449.1 | 146.4 | 38.9 | 34.8 | 26.1 | Poor |
| Nonparticipant | 404 | 490.6 | 159.9 | 39.4 | 35.2 | 26.3 | Poor |
| Nonparticipant | 404 | 561.1 | 182.9 | 41.7 | 37.3 | 26.3 | Poor |
| Nonparticipant | 404 | 616.5 | 201.0 | 42.4 | 37.8 | 25.4 | Poor |
| Nonparticipant | 405 | 290.0 | 94.5 | 33.6 | 30.0 | 25.3 | Poor |
| Nonparticipant | 406 | 826.9 | 269.6 | 145.8 | 134.0 | 99.9 | Fair |
| Nonparticipant | 408 | 1459.7 | 475.9 | 38.4 | 31.7 | 14.5 | Poor |
| Nonparticipant | 409 | 363.6 | 118.5 | 21.3 | 18.6 | 0.6 | Poor |
| Nonparticipant | 410 | 592.8 | 193.3 | 93.6 | 85.3 | 61.5 | Omit Test |
| Nonparticipant | 411 | 1623.3 | 529.2 | 9.8 | 7.8 | 2.0 | Fair |
| Nonparticipant | 412 | 495.1 | 161.4 | 13.3 | 10.5 | 6.0 | Fair |
| Nonparticipant | 412 | 645.3 | 210.4 | 13.8 | 10.9 | 7.6 | Fair |
| Nonparticipant | 412 | 718.1 | 234.1 | 13.7 | 10.8 | 8.9 | Fair |
| Nonparticipant | 412 | 781.2 | 254.7 | 13.6 | 10.7 | 8.6 | Fair |
| Nonparticipant | 414 | 678.0 | 221.0 | 12.1 | 9.6 | 3.1 | Fair |
| Nonparticipant | 414 | 767.5 | 250.2 | 12.7 | 10.1 | 4.3 | Fair |
| Nonparticipant | 414 | 892.6 | 291.0 | 13.1 | 10.4 | 5.3 | Fair |
| Nonparticipant | 414 | 1455.2 | 474.4 | 12.7 | 10.1 | 4.8 | Fair |
| Nonparticipant | 415 | 683.8 | 222.9 | 114.1 | 104.0 | 77.0 | Fair |
| Nonparticipant | 416 | 661.8 | 215.7 | 50.0 | 44.8 | 26.8 | Fair |

## *Pump Runs*

| Participant Type | On-site Audit ID | kWhr/MG | kWhr/AF | Horsepower Input | Brake Horsepower | Water Horsepower | Quality Rating |
|---|---|---|---|---|---|---|---|
| Nonparticipant | 417 | 3474.3 | 1132.6 | 2.9 | 2.5 | 0.2 | Poor |
| Nonparticipant | 418 | 87.9 | 28.6 | 13.5 | 11.8 | 9.2 | Poor |
| Nonparticipant | 420 | 407.4 | 132.8 | 79.2 | 72.2 | 50.1 | Poor |
| Nonparticipant | 420 | 446.2 | 145.5 | 80.2 | 73.0 | 52.6 | Poor |
| Nonparticipant | 420 | 493.2 | 160.8 | 80.6 | 73.4 | 57.1 | Poor |
| Nonparticipant | 421 | 831.4 | 271.0 | 165.3 | 150.6 | 68.2 | Poor |
| Nonparticipant | 422 | 362.8 | 118.3 | 59.0 | 53.2 | 19.1 | Poor |
| Nonparticipant | 422 | 452.9 | 147.7 | 55.1 | 49.7 | 23.1 | Poor |
| Nonparticipant | 422 | 596.0 | 194.3 | 52.8 | 47.5 | 21.9 | Poor |
| Nonparticipant | 423 | 359.4 | 117.2 | 52.9 | 47.6 | 13.3 | Poor |
| Nonparticipant | 423 | 414.4 | 135.1 | 50.6 | 45.6 | 18.1 | Poor |
| Nonparticipant | 423 | 635.4 | 207.1 | 49.7 | 44.8 | 17.3 | Poor |
| Nonparticipant | 424 | 306.6 | 100.0 | 51.0 | 46.0 | 15.5 | Poor |
| Nonparticipant | 424 | 361.2 | 117.8 | 48.3 | 43.5 | 20.2 | Poor |
| Nonparticipant | 424 | 508.3 | 165.7 | 45.5 | 41.0 | 20.0 | Poor |
| Nonparticipant | 425 | 1095.4 | 357.1 | 46.1 | 41.6 | 21.7 | Fair |
| Nonparticipant | 425 | 1115.3 | 363.6 | 46.5 | 41.9 | 22.8 | Fair |
| Nonparticipant | 425 | 1152.1 | 375.6 | 47.1 | 42.4 | 23.8 | Fair |
| Nonparticipant | 425 | 1183.4 | 385.8 | 47.4 | 42.7 | 25.0 | Fair |
| Nonparticipant | 426 | 904.4 | 294.8 | 95.1 | 86.6 | 38.3 | Poor |
| Nonparticipant | 427 | 1686.8 | 549.9 | 206.1 | 189.4 | 136.7 | Poor |
| Nonparticipant | 429 | 3148.7 | 1026.5 | 236.5 | 218.0 | 178.2 | Fair |
| Nonparticipant | 429 | 3653.1 | 1190.9 | 214.4 | 197.7 | 140.9 | Fair |
| Nonparticipant | 429 | 3722.6 | 1213.6 | 182.4 | 168.2 | 120.7 | Fair |
| Nonparticipant | 430 | 3534.5 | 1152.3 | 51.5 | 43.7 | 25.3 | Fair |
| Nonparticipant | 430 | 3660.9 | 1193.5 | 50.7 | 43.1 | 24.9 | Fair |
| Nonparticipant | 430 | 3688.3 | 1202.4 | 50.3 | 42.8 | 25.0 | Fair |
| Nonparticipant | 430 | 3833.5 | 1249.7 | 50.0 | 42.5 | 24.3 | Fair |
| Nonparticipant | 431 | 86.5 | 28.2 | 12.6 | 11.0 | 5.8 | Fair |
| Nonparticipant | 432 | 307.0 | 100.1 | 20.2 | 17.6 | 5.5 | Fair |
| Nonparticipant | 433 | 263.8 | 86.0 | 20.7 | 18.0 | 6.7 | Fair |
| Nonparticipant | 434 | 286.7 | 93.5 | 93.0 | 85.0 | 55.6 | Poor |
| Nonparticipant | 434 | 306.3 | 99.9 | 89.9 | 82.2 | 58.8 | Poor |
| Nonparticipant | 434 | 423.6 | 138.1 | 79.5 | 72.7 | 41.7 | Poor |

*Pump Runs*

| Participant Type | On-site Audit ID | kWhr/MG | kWhr/AF | Horsepower Input | Brake Horsepower | Water Horsepower | Quality Rating |
|---|---|---|---|---|---|---|---|
| Nonparticipant | 435 | 1780.3 | 580.4 | 194.2 | 178.5 | 127.3 | Poor |
| Nonparticipant | 435 | 1800.5 | 587.0 | 194.6 | 178.9 | 130.8 | Poor |
| Nonparticipant | 435 | 1828.0 | 595.9 | 194.9 | 179.1 | 132.1 | Poor |
| Nonparticipant | 436 | 1686.8 | 549.9 | 206.1 | 189.4 | 137.6 | Fair |
| Nonparticipant | 437 | 2008.6 | 654.8 | 303.8 | 280.1 | 157.1 | Poor |
| Nonparticipant | 438 | 1537.1 | 501.1 | 221.0 | 203.3 | 135.3 | Fair |
| Nonparticipant | 438 | 1575.6 | 513.6 | 221.3 | 203.6 | 139.5 | Fair |
| Nonparticipant | 438 | 1642.8 | 535.5 | 222.6 | 204.8 | 142.5 | Fair |
| Nonparticipant | 439 | 3813.6 | 1243.2 | 291.4 | 268.1 | 84.5 | Fair |
| Nonparticipant | 440 | 481.4 | 156.9 | 206.8 | 190.3 | 156.1 | CustMeter |
| Nonparticipant | 441 | 1058.3 | 345.0 | 85.5 | 77.9 | 55.0 | Fair |
| Nonparticipant | 442 | 303.7 | 99.0 | 24.3 | 21.4 | 13.7 | Fair |
| Nonparticipant | 442 | 313.9 | 102.3 | 23.0 | 20.2 | 13.7 | Fair |
| Nonparticipant | 442 | 403.6 | 131.6 | 20.6 | 18.2 | 11.5 | Fair |
| Nonparticipant | 442 | 487.0 | 158.8 | 18.2 | 16.0 | 9.4 | Fair |
| Nonparticipant | 443 | 1122.2 | 365.8 | 26.1 | 23.0 | 12.2 | Poor |
| Nonparticipant | 444 | 643.5 | 209.8 | 22.9 | 20.2 | 1.3 | Poor |