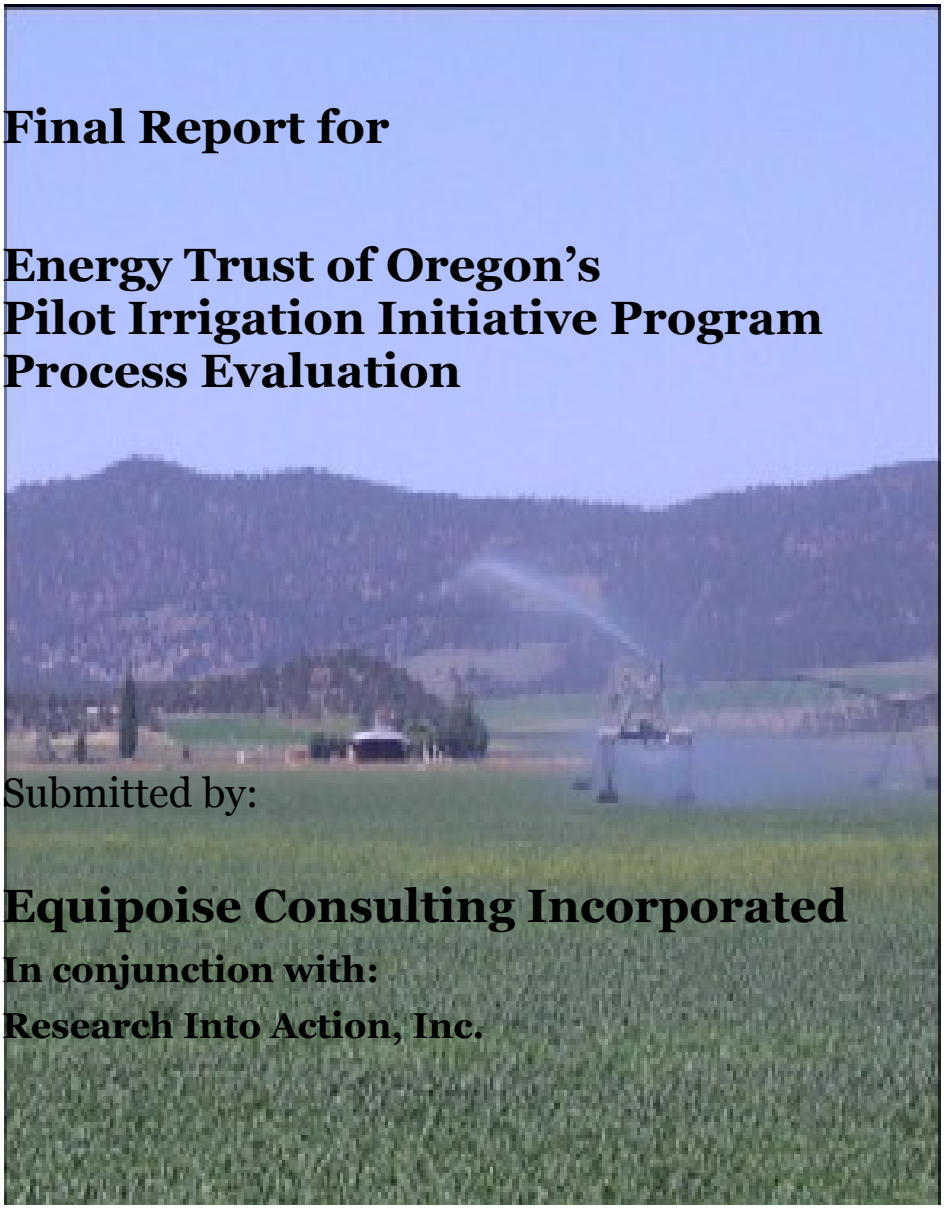
Equipoise Consulting, Inc.

Evaluation

Project Management

Final Report for

Energy Trust of Oregon's Pilot Irrigation Initiative Program Process Evaluation



Submitted by:

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In conjunction with:

Research Into Action, Inc.

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1 EXECUTIVE SUMMARY

The Irrigation Initiative Program (IIP) was implemented by a Program Management Contractor (PMC) as a collaborative venture between Energy Trust of Oregon and the electric utility of the intended growers, PacifiCorp. It targeted agricultural customers within the Klamath Basin – a geographical area with growers in both California and Oregon. The PMC was charged with running the program as conceived by Energy Trust and PacifiCorp. The program was considered a pilot and planned to run from June 2005 through 2007. Subsequent decisions by Energy Trust and PacifiCorp caused a divergence in how the program was run, and brings the pilot to a close in Oregon as of July 31, 2007, although it is expected to continue within California beyond this time.

The program attempted to increase the efficiency of the irrigation pumping systems for the estimated 3,949 eligible customers (2,073 in Oregon and 1,876 in California) through two distinct avenues. Educating the growers regarding the efficiency of their pump system through a pump test, combined with financial incentives to help defray the cost of repairing the pump was the first approach. The second approach was down stream of the pump. Irrigation system nozzles were provided free of charge to any grower who exchanged old nozzles.

1.1 Evaluation Objectives

With the changes in the program implementation structure within Oregon, Energy Trust felt that an evaluation was needed to document the program and provide recommendations for potential future programs.

The evaluation goals for this process assessment were to:

1. Document the program's structure, goals, history, and performance.
2. Review and analyze the program to provide recommendations on how to improve program implementation and effectiveness.

1.2 Key Findings

While there were multiple findings from the evaluation, the key ones are:

- The Irrigation Initiative had a positive outcome from a field perspective in that those involved with the program agree there is a need for the program measures—nozzles, pump tests, and pump repairs— and participating growers and vendors expressed high satisfaction.
- Field contacts believe that many more pump tests could have been delivered had the program run unhampered for two full irrigation seasons. Progress had been made towards savings goals and the field contractors reported high levels of interest in the program among growers; consistent with this finding, surveyed participating growers expressed concern that their irrigation systems and components use energy and water efficiently.
- The collaboration between Energy Trust and PacifiCorp was hampered by their different organizational cultures, which in turn reflect their different regulatory oversight requirements. The regulatory oversight of Energy Trust has brought about systems that are inflexible. The political lines created by the differences between California and Oregon trumped the geographical realities of the Klamath Basin growers and the desire to provide a simply understood and effective agricultural energy efficiency program across state boundaries.

- Because of the different requirements, the program was administratively complex. This administrative complexity spawned micro-management which had multiple consequences: it increased program costs, strained program relationships, and ultimately resulted in far fewer measures being delivered by the program than anticipated, because the PMC effort was diverted into administrative tasks rather than field tasks.
- With a deemed savings of 9.2 kWh per year per nozzle, and assuming that all the nozzles exchanged were installed into an irrigation system, the 14,515 nozzles indicated to be exchanged by Oregon growers provide savings of 133,538 kWh/year (0.02 aMW). The average life of a nozzle is assumed to be 3 years, which provide 400,614 kWh for the lifecycle of the nozzles. Forty-five percent of the nozzles forecast to be exchanged within this period of time actually were exchanged.
- The program garnered no energy savings from pump repairs or pump retrofits, although survey participants indicated they took recommended actions outside of Energy Trust.
- One of the main drivers for the program, an expected >500 percent rate increase, did not unfold as planned.

1.3 Key Conclusions and Recommendations

Conclusion 1: In response to triple oversight from a board of directors, regulators, and legislatures, Energy Trust has evolved systems and processes that put its fiduciary responsibilities front and center, with very high standards of completeness and accuracy of actions, the tracking of actions, and the savings associated with the actions. Consequently, these systems and processes are not flexible. And they impose significant administrative costs that need to be offset by high program savings, so that on a per-kilowatt-hour-saved basis, the costs are low and programs are cost effective.

Recommendation 1A: Energy Trust needs to recognize its systems and processes are not flexible, having been designed to attain specific objectives. Energy Trust staff involved in program development need to keenly understand that "exceptions" to standard procedures—most significantly, the tracking of program activities—cannot be made.

Recommendation 1B: Should Energy Trust and another agency decide it might be mutually beneficial to offer a single program to customers, Energy Trust should clearly express to the other party that it needs to be the implementing agency. The other party could contribute to program design and would be asked to bear the costs of its participants, but Energy Trust is not able to work collaboratively; its systems and processes are fixed. However, because Energy Trust cannot be an implementing party in another state, collaboration across two states is not recommended in the future as the difficulties that arose are organizational and outside the ability of the program managers to overcome.

Conclusion 2: Following its established practice, Energy Trust's RFPs to solicit a PMC for the Irrigation Initiative requested contractor services to develop and implement a program. Also following established practice, the resulting contract for the PMC's services was relatively specific regarding the PMC's required activities, which assumes a program design. This process had the effect of limiting the contribution PMC team members could make to the articulation of program assumptions, design, and goals (in areas in which the PMC team members are considered to be experts), to the detriment of the Irrigation Initiative.

Recommendation 2: Energy Trust can continue to request PMC services through an RFP for program development and implementation, yet it should execute two sequential contracts with the

selected firm, the first for program design/development and the second for program implementation. This approach would enable Energy Trust to make better use of the technical and market expertise of the winning bidder by increasing their role in program design, an expertise that is particularly important for programs targeting a community with an associated culture, be that a geographic community or community defined by some other criteria.

Conclusion 3: Judging from the EQIP program, federal programs also lack flexibility. The Irrigation Initiative was hampered by inaccurate assumptions regarding how it would leverage the EQIP program.

Recommendation 3: When considering how an Energy Trust program might leverage a federal program, it is important for program developers to clearly understand how the federal program operates, its timelines, and its criteria. The program logic should reflect both Energy Trust and federal constraints and should be developed in advance of contracting with a PMC for implementation services.

Conclusion 4: A primary factor underlying the Program's design was the planned rate increase. Without the planned rate increase of >500% the anticipated demand for program services was reduced.

Recommendation 4: Energy Trust should consider changing the design of, or even terminating, a program if major factors on which the program's success are predicated change.

Conclusion 5: Some program participants that received pump repair and replacement recommendations from the program pump tests had taken action on recommendations. None of the irrigators that took action applied for or received Energy Trust incentives.

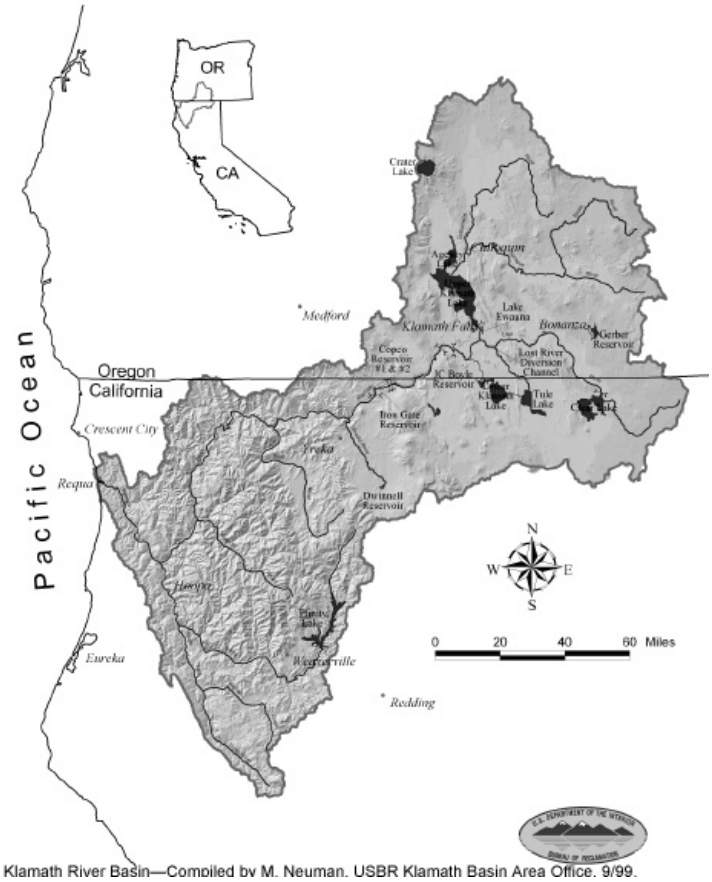
Recommendation 5: If, and when, Energy Trust considers offering a pump test services as part of one of its programs research should be performed to see if the provision of free (or partially subsidized) pump testing with no incentive for a repairing the pump will result in a sufficient number of pump repairs and replacements to make the service cost effective.

2 INTRODUCTION

This section provides a brief overview of the program being evaluated, and provides context to the program and how the evaluation was structured. It is followed by a description of the evaluation approach.

2.1 Overview of Program

The Klamath River Basin extends across state lines as shown in the map below. The agriculture in this area includes potatoes, hay, barley, wheat, ranching, and more. For decades, farmers in this area were fortunate to have very low energy costs for irrigation pumping. These low prices were fixed in long term contracts from 1956 and, in some cases, before. The term of the 1956 contract was 50 years, meaning the contract would expire in April 2006. Prior to 2004, PacifiCorp (the electric utility servicing this area) began to consider a rate increase that would affect growers. In preparation for this possible rate increase, PacifiCorp and Energy Trust of Oregon teamed up to provide energy efficiency information and financial incentives for energy efficiency measures to their agricultural customers. By creating a team, the two entities hoped to provide a seamless program for growers in the Klamath Basin.



Klamath River Basin—Compiled by M. Neuman. USBR Klamath Basin Area Office. 9/99.

The design phase of the pilot program, titled the Irrigation Initiative Program (IIP), began in late 2004 and culminated with the contracting of a program management consultant (PMC) in October 2005. Interim contract arrangements were in place for Oregon as of June 2005. The PMC was charged with running the program as conceived by Energy Trust and PacifiCorp. The pilot was planned to run through 2007.

The program attempted to increase the efficiency of the irrigation pumping systems for the estimated 3,949 eligible customers (2,073 in Oregon and 1,876 in California) through two distinct avenues. Educating the growers regarding the efficiency of their pump system through a pump test, combined with financial incentives to help defray the cost of repairing the pump, was expected to cause 20 percent of the pumps tested to be repaired or replaced. About 3 percent of the pumps tested were expected to have an impeller adjustment and thus increase efficiency. The second approach was down stream of the pump. Irrigation system nozzles were provided free of charge to any grower who exchanged old nozzles. The new nozzles aimed to decrease the leakage within the system and

improve the water application uniformity. Poor water application and leakage can cause the pump to run longer in order to provide the necessary irrigation.

The program ran in the Klamath Basin area as described above from June 2005 through August 2006. Beginning September 2006, Energy Trust and PacifiCorp changed how the program was presented in California versus Oregon for the remaining year of the pilot program. (Note: September 2006 was the end of the 2006 pumping season.) Within California, the program would continue to actively pursue energy efficiency while growers within Oregon would have the same measures available, but the customer would need to call the PMC or Energy Trust to participate.

More details about how the program was structured and run are provided in Section 4, Results.

2.2 Setting the Stage for the Program

As briefly mentioned in the previous section, a potential rate increase was one of the drivers for the energy efficiency program planned by ETO and PacifiCorp. Further detail regarding irrigation costs in this region as well as other programs in the area help provide a richer context to the possible mind-set of the growers around pumping energy efficiency and irrigation systems.

2.2.1 Energy Pricing and Irrigated Agriculture in the Upper Klamath Basin

A brief written in July 2004 by the Oregon State University Extension Service (EM 8846-E) provides background to the issue of energy pricing for agriculture in this area. Much of this brief is paraphrased next.

As a result of a contract between the U.S. Bureau of Reclamation and Pacific Power's predecessor, COPCO, growers within the Klamath Reclamation Project (Project) received a discounted rate for energy. This arrangement, put in place in 1917, and last updated in 1956 (for a 50 year contract that expired in 2006), provided irrigators with energy costs that were (as of 2004) at least one-tenth the price paid by other growers in California and Oregon using Pacific Power energy and one-fifth to one-eighth the cost of growers using energy from other utilities. Additionally, Project growers did not pay standby fees (a cost per horsepower of pumping capacity) nor were they charged for extending power lines to their pumps. Growers outside the Project, but still within the Upper Klamath Basin, also were provided energy costs that were 87 percent lower than other growers served by PacifiCorp, were exempt from the stand-by cost, but did pay for line extensions. To provide a sense of the actual rates, at the time of the brief (2004), the Project and near-by non-Project growers paid less than one cent (0.6 cents and 0.75 cents, respectively) for a kilowatt hour (kWh) of energy used. Comparatively, other Oregon irrigators paid 5.696 cents per kWh for energy from PacifiCorp and 3.06 to 4.70 cents per kWh from other utilities. It was estimated that energy costs for growers in the Upper Klamath Basin were less than one percent of their production costs.

PacifiCorp's contract with the Bureau of Reclamation expired in March 2006, resulting in a rate increase for Klamath basin irrigators. If the rates were to move upwards to a value similar to that paid by other growers, how could the growers be affected? The brief indicated that the "viability of the agriculture in the region does not depend on the current low energy prices, although these prices provide significant financial benefits to the land-owners and owner-operators in the region". However, it also indicated that some of the sprinkler irrigated lands *may* become unprofitable with an increase in energy costs.

So, here you have an agricultural region that had enjoyed very low energy costs across two to three generations of growers. There was the possibility of losing their livelihood or at least reducing their

profit. The rate increase was a highly charged issue for the region. Nothing had been officially determined in November 2005, when we first interviewed pump dealers. During those interviews, the dealers indicated that their customers were taking a mixed stance of wait-and-see with a few being proactive in attempting to reduce energy use. However, dealers stated that first costs, crop yields, and labor costs were all more important than energy efficiency when their customers made purchase decisions. This is not surprising since energy efficiency within irrigated land had probably not been part of the vernacular because of energy costs.

In early 2007, legislation was passed in Oregon capping rate increases so that the rate increase would be capped at 50 percent of the previous year rate for a seven year period and provide a phased-in approach. A four year phase-in was established for Klamath basin irrigators in California, as a result of a multiparty settlement agreement associated with Pacific Power's recent California rate case.

2.2.2 Federal Programs for Agriculture in the Klamath Basin

Not only was energy a hotly debated topic in the Klamath Basin area in the few years leading up to the IIP, water use was an issue between agriculture, recreational, environmental, tribal, and commercial and sport fishing businesses. The 2002 federal Farm Bill allocated $50 million of public funds to the Klamath River Basin to promote irrigation efficiency (and hence reduce water use). These funds, distributed through the federal Environmental Quality Incentives Program (EQIP) during fiscal years 2002-2007, were allocated to support use and installation of ground and surface water conservation practices. While there are other agriculture related federal programs (i.e., the Farm and Ranch Lands Protection Program, Conservation Innovation and Grants, etc.), the Klamath Basin component of EQIP[1] focused relatively large resources across a relatively small geographic area.[2] The program provided generous cost-sharing from 75 percent to as much as 90 percent of the costs (under specific circumstances) that was used by the Klamath Basin growers to:

- install linear or center pivot irrigation (low pressure sprinkler applications),
- install underground PVC piping to replace leaky aluminum pipes,
- move surface pipe to underground pipe (reducing wear and tear on the pipe),
- upgrade from flood to sprinkler systems (both high pressure and low pressure),
- install PVC solid set irrigation systems (reducing leaks and friction),
- put in new wheel lines, and
- take out open ditches.

In 2005, dealers saw the trend towards center pivot irrigation systems being driven by the availability of EQIP funding. However, little is known about the irrigation systems prior to EQIP-related changes. Anecdotal evidence suggests that some growers are moving from a flood irrigation system (with higher water use, but lower energy use) to a sprinkler irrigation system (with lower water use and higher energy use). Based on the purpose for EQIP in the Klamath Basin, one can assume that water use was reduced by the equipment purchased through the program, but there is a likelihood that energy use may have increased.

[1] EQIP is available in every State, Puerto Rico, the Virgin Islands, and Pacific Basin territories of Guam, Northern Mariana Islands, and American Samoa.

[2] For example, in 2006, the California Klamath Basin Ground and Surface Water Conservation Program (GSWCP) received $4 million in funding while the state received $9 million. In Oregon, $1.7 million went to this Program while $11 million when to the state in general for 2006.

Details on these two issues help to frame the setting within the Klamath Basin at the beginning of the IIP. Growers were not only unfamiliar with thinking about energy efficiency for their pumping systems, they were stated to be actively upset with the upcoming possibly large rate increase. It can be extrapolated that being required to address energy use for their pumps would be irritating. Additionally, a federal program had been in place since 2002 that provided liberal cost-sharing for new irrigation equipment that did not necessarily save energy. The pilot program appeared to have hurdles to overcome that a typical energy efficiency program does not have to handle.

2.3 Evaluation Approach

Prior to this process evaluation, two short assessments of the program had occurred. In November 2005, a pump dealer baseline survey was conducted. This survey was to form the basis for possible changes seen by the pump dealers due to the program. The memo with the results of this baseline is provided in Appendix A. Early in the implementation of the nozzle exchange component (March 2006), a survey occurred of nozzle vendors to provide quality assurance, determine satisfaction with the program to date and obtain feedback from the vendors. This memo is provided in Appendix B.

The evaluation goals for this process assessment are to:

1. Document the program's structure, goals, history, and performance.
2. Review and analyze the program to provide recommendations on how to improve program implementation and effectiveness.

The evaluation sought to answer the following questions:

1. What were the program results and how did the context (i.e., the possible rate increase, EQIP program) in which the program was planned and fielded influence those results?
2. How was the collaboration between ETO and PacifiCorp, and how could it be made more effective or improved?
3. How was the program structured? Was this structure effective and could improvements be made? How were performance goals set by Energy Trust and PacifiCorp? Were the program's goals, objectives and requirements effectively communicated between Energy Trust and PacifiCorp, to the PMC and to the vendors and the participants? How was the program documented (e.g. database, paper documentation etc.)? Did the program documentation meet the program requirements and how could it be improved?
4. How did the program management contractor implement the program? Was it implemented as planned? If changes were made how did they impact the Program? Did the PMC achieve the performance goals? What were the important features of the Program and how did they affect the Program? In which areas could the implementation have been improved? What other factors had impacts on the Program?
5. How did the customers view the Program? What was their level of satisfaction? What actions do they plan to take in the near future because of their interaction with the program?
6. How did the pump test / nozzle vendors view the Program? What were the changes (if any) since the baseline vendor survey took place in November 2005?

A qualitative assessment of the program, through in-depth interviews, customer surveys, and a review of the program documentation was used to answer the evaluation questions. This evaluation

report covers the program from inception to the point when Energy Trust and PacifiCorp split how the program ran (September 2006).

3 METHODS AND DATA SOURCES

This section outlines the data sources, followed by the analysis methods used to analyze the data collected during the evaluation.

3.1 Data Sources

Primary data collection was the main avenue for the information used in the evaluation. We surveyed customers who had participated in the pump test component of the program, performed in-depth surveys with program implementers and relevant program staff, as well as calling back the pump and nozzle dealers that had been contacted in the two previous assessments. The data collected, sample plan and actual data point are shown in Exhibit 3.1.

Exhibit 3.1
Data Collection Planned and Actual

Data Source	How Gathered	Sample Plan	N Planned	N Actual
Pump Test Participants	Telephone Survey	Random from 10/30/06 FastTrack Population	15	15
Pump Dealers / Vendor Dealers	Telephone Survey	Census of Previously Surveyed Dealers	5	6
Relevant Program Staff	In-depth Interview	Census	6	8
Total			26	29

In order to develop an understanding of the experiences of pump test participants, the evaluation team obtained a list of 62 participating irrigators from Energy Trust. These customers had participated in the program prior to August 31,2006. Telephone interviews were conducted with 15 of these growers from November 8 through November 10, 2006. The disposition of calls made to the growers on the list is shown in Exhibit 3.2. The average length of the survey was 15 minutes.

Exhibit 3.2
Disposition of Pump Test Participant Interview Attempts

DISPOSITION		TOTAL
Completed		15
Incomplete/ inaccurate contact information	No/incorrect contact name	7
	No/incorrect contact number	7
	Disconnected number	2
	Left company/changed jobs	1
Not available/ qualified	Not available during survey	7
	No pump tests done (self-reported)	1
No contact made	Attempts failed	14
	No attempt (quota reached)	8
Total		62

Pump and nozzle dealers were surveyed the week of November 6th as well and averaged almost 11 minutes. Most in-depth telephone interviews, averaging one hour in length, took place with the following staff during the week of November 13, 2006. Interviews with the sub-contractors to the Program Management Contractor took place during the week of December 4th and 11th. In-depth interviews took place with:

- Program Manager for Energy Trust
- Program Manager for PacifiCorp
- Program Planner for Energy Trust
- Commercial Manager for Energy Trust
- Contracts Manager for Energy Trust
- Program Manager for Program Management Contractor (PMC)
- Resource Conservation District (RCD) employees who were subcontractors to the PMC.

In addition to the primary data collection, we reviewed eight monthly reports from the PMC (January through August 2006) and program planning documentation. Information from the Internet was obtained regarding the EQIP program and to help determine some of the context of the area prior to the program.

3.2 Analysis Methods

The evaluation team used qualitative data analysis methods to analyze the information obtained from the in-depth interviews. Factual information from the interviews was augmented with information obtained from a review of program documents. Contact's assessments and opinions were considered to give a balanced view of program experiences without giving undo weight to any one viewpoint.

The team analyzed the participant survey data using standard statistical methods, implemented using a statistical software program. The majority of survey questions were closed-form and the results were tabulated. Responses to open-ended questions were categorized and reported.

4 RESULTS

This section presents the results for the assessment of the Irrigation Initiative's program processes. We provide the programs defining characteristics, give details about the program planning, contracting, measures, marketing, and tracking activities, and then provide results from the measures implemented, the pump test participant survey, followed by the pump dealer survey.

4.1 Defining Program Characteristics

The Irrigation Initiative has these defining elements:

- The program was implemented as a two-year pilot—very short duration;
- The program targeted a very small set of customers (relative to the total number of customers served by Energy Trust);
- The savings from the program's pump activities accrue only after a two-step process: test and repair/ replacement;
- A single, unified program was implemented in two states—Oregon and California;
- A single, unified program was implemented by two organizations—Energy Trust and an electric utility (PacifiCorp);
- The program was offered to a subset of Energy Trust customers defined by region, as well as by commercial sector; and
- The short-term, limited-locale, limited-target-market program was implemented using a PMC.

These elements have significant implications for the program's outcome, as will be demonstrated.

4.2 Program Structure, Goals, and Achievements as of September 2006

Energy Trust and PacifiCorp executed in November, 2004 a Memorandum of Understanding to develop a joint request for proposals (RFP) to select a single PMC to develop and implement both Energy Trust program in Oregon and the PacifiCorp program in California. Accordingly, the two organizations issued the RFP on December 15, 2004. Subsequently, in August 2005, the two organizations signed "Agreement between PacifiCorp and Energy Trust of Oregon, Inc. relating to the Development, Administration and Evaluation of Jointly Administered Energy Efficiency Irrigation Programs," laying out the obligations of each party. Each organization then contracted separately with the selected PMC; the contract between Energy Trust and the PMC became effective on October 1, 2005. Energy Trust amended its contract with the PMC effective September 1, 2006 to wrap up the pilot program activities in Oregon through July 31, 2007. The new contract essentially keeps the program in place, but with little to no outreach by the PMC in Oregon. Only customers who seek out the PMC will be provided services.

The irrigation energy efficiency measures, goals, achievements, and processes as of September 2006 are:

- Nozzle exchange—free nozzles given in a one-for-one exchange of worn nozzles; no minimum or maximum nozzle constraints imposed.

  - Goal: 100,000 nozzles (65,000 in Oregon—65% of goal), targeting nozzles used in hand lines, wheel lines, and solid set sprinkler systems.
  - Achieved as of September 2006: 43,400 nozzles (14,515 in Oregon—33% of achieved, 22% of original Oregon goal, 45% of Oregon goals for the time period under evaluation)
  - Process: PMC collaborates with nozzle suppliers and provides them with replacement nozzles sufficient to meet demand plus customer information and required paperwork to accompany each exchange. PMC enters nozzle exchange data for each participant into Energy Trust's FastTrack system and subsequently receives an incentive of $0.68 per nozzle.

- Pump tests—participants receive from PMC free pump test and brief irrigation system review, as well as information on Irrigation Initiative pump repair/ replacement incentives and Energy Trust other services and incentives, the EQIP program, the Oregon Business Energy Tax Credit (BETC), and the nozzle exchange opportunity.
  - Goal: 2,000 pump tests (1,164 in Oregon—58% of goal)
  - Achieved as of September 2006: 533 (388 in Oregon—73% of achieved, 33% of original Oregon goal, 67% of Oregon goals for the time period under evaluation)
  - Process: During irrigation season, PMC measures pump lift, flow, electrical demand, and system pressures, and indirectly measures voltage, amps, power factor. PMC provides each participant with a written report documenting the test results. It was anticipated that savings would be generated from the repair/replacement of pumps identified as performing poorly, the replacement of nozzles identified as worn, and the repair/retrofit of sprinklers, gaskets, hoses, drains, and valves identified as leaking. PMC enters pump test data for each participant into FastTrack and subsequently receives an incentive of $150 per pump (with a maximum of one test per eligible pump).
- Pump repairs/replacements—participants are encouraged to apply for incentives from the Natural Resources Conservation Services (NRCS) EQIP or from Energy Trust for pump repair/replacement recommended by the pump tests.
  - Goal: 400 repairs/replacements (240 in Oregon—60% of goal, 21% of pump tests)
  - Achieved as of September 2006: 0
  - Process: Participants eligible for EQIP funding will be encouraged to apply and will receive application support from the PMC (through its subcontractors, the Resource Conservation Districts). The EQIP incentive is 70% of measure cost. Participants can apply to Energy Trust for any recommended pump repairs/replacements that do not receive an EQIP incentive and for which the measure passes the Benefit Costs Test, as calculated by the PMC using Energy Trust's calculation tool. Energy Trust incentive is 30% of the approved measure cost.
- Pump re-tests—participants receive from PMC free pump re-test after recommended pump repairs or replacement has occurred, to verify savings.
  - Goal: 400 pump tests (240 in Oregon—100% of repairs/replacements)
  - Achieved as of August 2006: N/A (no repairs/replacements)

  - Process: Subsequent to participant repairing or replacing pumps per the PMC's recommendation, the PMC conducts a pump re-test using the same method as the previous pump test, producing a participant report, entering participant data into FastTrack, and subsequently receiving an incentive of $150 per pump (with a maximum of one re-test per eligible pump). The program logs energy savings for the pump tests at the time the re-test confirms savings.

- Pump adjustments—participants receive from a pump company a pump adjustment at the time of the pump test when the test indicates energy efficiency improvements can be attained by adjusting the clearance between the bowl and the impeller of the pump. PMC subsequently re-tests the pump to verify savings. The participant receives from Energy Trust an incentive of 30% of the pump adjustment cost.
  - Goal: 60 adjustments (36 in Oregon— 60% of goal, 3% of pump tests)
  - Achieved as of August 2006: 0
  - Process: PMC coordinates with participant to conduct pump test at a time when a representative of participant's pump company is available. PMC conducts standard pump test; pump company representative makes identified adjustment; PMC conducts standard re-test. PMC produces test and re-test pump reports, enters participant data into FastTrack, and subsequently receives an incentive of $200 for the test/adjustment/re-test.
- Pump system evaluations for re-designs and major projects—while conducting pump tests, the PMC can identify opportunities for system re-designs or other major projects and report the opportunity to Energy Trust, for possible follow up through Energy Trust Production Efficiency program.
  - Goal: no goals are associated with this activity
  - Achieved as of August 2006: 0
  - Process: PMC reports identified projects and potential associated energy savings to Energy Trust. PMC implements identified projects only after specific, written pre-approval of Energy Trust.

The PMC was assisted by Resource Conservation District (RCD) staff in Oregon and California, under subcontract to the PMC. The RCD staff have existing relationships with growers throughout the Klamath Basin and marketed the program through personal contact. RCD staff scheduled all of the pump tests and acted as a liaison between the growers and the pump testers. Staff worked to promote the program in small areas at a time, in order that scheduled pump tests might be in close proximity to each other, thereby reducing travel costs and making the most of the pump tester's time. RCD staff also followed up, as requested, with customers whose pump tests indicated repair/replacement was needed and helped customers apply for EQIP incentives.

The PMC developed and printed all identified needed forms and documents for the program, subject to Energy Trust and PacifiCorp approval.

The PMC was required to use Energy Trust tracking systems of Goldmine (for customer prospects in Oregon only, as California prospects would have needed to sign a release) and FastTrack (for program participants—nozzles, tests, repairs—in both states). Participation forms include obtaining customers' signatures, which authorize the sharing of information between PacifiCorp and Energy Trust. The PMC verified a would-be participant received power from PacifiCorp by submitting the

customer's pump number or account number or both to PacifiCorp, who confirmed the customer's status and provided the PMC with the account's annual electricity consumption, necessary to augment the pump test data. Early in the program, it was thought the PMC could use FastTrack to confirm eligibility for PacifiCorp's Oregon customers and obtain usage data, but it became evident that PacifiCorp could more readily do these tasks for all customers.

The PMC's contract with Energy Trust required it provide a toll free phone number for the program and established call center customer service levels as set forth in the contract. The contract also set forth quality control activities to be undertaken and required the establishment of customer complaint procedures.

The PMC's contract with Energy Trust was amended in the summer of 2006 to enter a "Phase 2" program phase-out period, effective September 1, 2006 through July 31, 2007, described in more detail below.

4.3 Program Planning

Energy Trust's manager of planning first conceptualized a program to serve agricultural customers that were not undertaking the type of large equipment investment served by Energy Trust's Efficiency Production program. As stated in Section 2.1, the notion of targeting Klamath Basin growers arose when PacifiCorp announced electricity rates would be increasing in the Basin following expiration of its 1956 contract with the Bureau of Reclamation. Staff of Energy Trust and PacifiCorp discussed how PacifiCorp was very interested in a program to help the growers mitigate the impact of increasing energy costs; at that time, Energy Trust was a new organization and itself eager to serve its constituents and reluctant to appear unresponsive to customers burdened by energy costs.

Although the program is formally a subprogram of Energy Trust Production Efficiency Program, which serves agricultural as well as other industrial customers, it was designed and implemented as a distinct program, in large part because only PacifiCorp customers in the Klamath Basin would be eligible, rather than growers throughout Energy Trust's service territory.

The program took initial shape in discussions between Energy Trust's manager of planning, a consultant the planning manager hired to advise on program development, Energy Trust's first program manager for this pilot[3], and the PacifiCorp program manager. Several of these staff traveled to the region, talked with people they understood to be key players in the irrigation market (staff of federal agencies working in the Klamath Basin, water user groups, and a regional energy committee), and discussed ways Energy Trust and PacifiCorp might help through an energy efficiency program.

The staff believed PacifiCorp customers in Klamath Basin would benefit from a single program, uniformly and seamlessly implemented across the two states. They sought to complement the many resource management activities already occurring in the Basin, such as the EQIP program, implemented by NRCS. According to Energy Trust staff, "We didn't want to get in the farmers' way and we didn't want to add to the confusion. There are so many agencies active there."

Energy Trust staff described "spending a lot of time" with NRCS staff to see how energy savings might be integrated into the federal program's water conservation activities. For example, staff learned that the EQIP program was encouraging farmers to upgrade their irrigation systems to center

[3] The first program manager subsequently left Energy Trust and his successor implemented the program.

pivot systems yet was missing the opportunity to encourage energy-efficient, low-pressure center pivot systems.

At that time, the staff recognized energy costs are a highly politicized issue for the Klamath Basin growers. It continues to be an issue as recently evidenced by a November 30, 2006 article in the Klamath Falls paper the *Herald and News*, which reported that on November 29, a group of Klamath Basin off-project water users filed suit in Klamath County Circuit Court against PacifiCorp asking for $86 million in damages for allegedly violating a 1956 contract on power rates.

In addition to seeing the value of a single program for all PacifiCorp growers in the region, regardless of the state they reside in, the staff anticipated some reduction in implementation costs would be attained as the two sponsors split the costs of activities they otherwise would each need to incur. This expectation did not materialize.

The final program measures passed program cost-effectiveness screening. The irrigation market in the Klamath Basin is reported by Energy Trust staff to be complex, with uncertainty around such issues as what proportion of systems use center pivot, what proportion use ground water, what proportion of pumps are already good, and what proportion of growers are likely to take advantage of the program. A consultant to Energy Trust was described as having done "a good demographic analysis with the available data," but then other experts with field experience with whom Energy Trust consulted would disagree with the first consultant and with each other. Energy Trust staff report it was difficult to form even a good educated guess. "We couldn't justify spending the money it would take to really understand this market; and even were we to, the data just aren't there."

Regardless of this lack of specific market knowledge and to the best of their ability, the sponsors, assisted by consultants, determined the program goals in terms of number of nozzles and pump tests to be conducted. The PMC advised on the number of pump tests that could be completed based on recent experience in the Klamath Basin, likely proportion of pumps that would be found in need of repair or replacement—about 40% (20% repair, 20% replacement), which turned out to be a good prediction by the program based on the pump test results. The PMC contacts said they were not involved in setting the goals, other than assuring the sponsors that they had the staffing resources to meet the goals.

Contacts agree program planning was insufficient. First and foremost, Energy Trust and PacifiCorp decided to pursue the project without Energy Trust staff having considered the implication of program tracking requirements and Energy Trust's program tracking procedures and software. Staff recognized at the outset that program records would need to clearly distinguish between Oregon and California activities and costs, but staff did not think through what this would entail. In practice, all of the fiscally related procedures and tracking software Energy Trust had painstakingly developed over the four years since its inception and that govern all of its programs had to be used for the Irrigation Initiative, despite that its defining characteristics (see Section 4.1) were largely unique and mostly unsuited to these procedures and systems.

As described, staff sought to complement, extend, and leverage existing conservation efforts in the Klamath Basin. Staff decided pump tests nicely fit these objectives, as pump repairs and replacements are covered by EQIP, but not the somewhat costly tests that are required to substantiate the claim that repairs/ replacements are needed. However, staff did not understand the procedures of EQIP and the constraints imposed by the seasonal nature of crop production, and consequently did not realize the significant impact the EQIP procedures would have on the timing of activities in the two-year pilot. Pump tests can only be conducted while pumps are operating—during the irrigation period of spring and summer, which was acknowledged during the planning stages. However, EQIP

accepts applications in the fall of the year and makes incentive awards to accepted applications in spring of the following year. At the time the EQIP awards are made, growers may have just enough time to repair their pumps for the growing season, or (more likely) will need to wait until after the growing season to do the work.

Consequently, pumps tested by the Irrigation Initiative in the summer of 2005 would be unlikely to be repaired/ replaced until fall 2006, at which time they could be re-tested per the Initiative's procedures. And pumps tested in the summer of 2006 would be repaired/ replaced in the fall of 2007— too late for re-testing and the claiming of savings for the program. The EQIP procedures and irrigation schedules thus meant the two-year pilot was only likely to reap pump repair/ replacement savings from its first summer of activity.[4]

A more complete understanding of the EQIP procedures and growers' constraints might have enabled the pilot design to better mesh with EQIP. As it turned out, the situation was even worse than the structure of the two programs suggests. As described below, the program had a delayed start and was not fully operational in the summer of 2005. Thus, there was very little opportunity for the program to reap pump repair/ replacement savings since the pumps were in operation for a short period of time at the beginning of the program.

One factor that could not be anticipated was when the Oregon legislature (subsequently followed by the California legislature) decided in the second half of 2005—after initial pump tests had begun—to phase in the rate increase over a period of years. With this decision, one of the main drivers of the program disappeared and, in the words of Energy Trust staff, "The program just didn't make sense after that, but we were too far along to do anything other than continue."

The interviewed RCD staff expressed regret that Energy Trust had not involved them in program planning and goal setting as they felt their knowledge of the Klamath Basin irrigation market would have been an asset to the program design. They believe they could have contributed to the establishment of more accurate goals (such as the initial assumed allocation of energy savings between Oregon and California), more appropriate marketing (see Section 4.6), better coordination with the EQIP program, and better crafting of the program to growers' constraints and to the local culture. They also would have appreciated being informed of the program's financial planning and constraints. "This last year (2006) it was difficult to go ahead with the program when Energy Trust seemed ready to pull the funding at any moment."

In the opinion of RCD staff, "Energy Trust wanted the program to work, but they didn't know how to do that in our area. Any program like this is going to be successful only if it is run by local people who are known and trusted by the community and who have the latitude to make the program work. A top-down driven program will never be successful in a tight community."

In spite of the Irrigation Initiatives challenges and shortcomings, those closest to the market—the PMC and its subcontractors, the RCDs—believe in the value of pump tests and believe the idea to link to the EQIP program was appropriate. RCD staff described the program as "important. There was a need for it, and a great response from participants." The RCD staff estimates there continues to be demand for pump tests in the Klamath Basin. "Had we started in April 2005, we could easily have done 500 more pump tests. Had we had less time and expense taken up administratively with the program this year, I think we would have tested a couple hundred more pumps. People are still

[4] In California, the program was approved by the CPUC as a three-year program. Thus, California customers can get pump tests in 2006 and have time to receive EQIP incentives. Note that no pump tests were offered in California in 2005.

contacting me. Were we to run the program for another year, I'm sure we could do an equal number of tests."

4.4 Program Contracting

Energy Trust program manager involved Energy Trust's contract manager once there was general consensus within Energy Trust and between Energy Trust and PacifiCorp to move forward with the program. On November 11, 2004, a memorandum of understanding was executed by Energy Trust and PacifiCorp to develop and issue a joint RFP to select a PMC to develop and implement the irrigation program. Work had already begun on the RFP, which was finalized and issued on December 15, 2004.

This was followed by a Memorandum of Agreement ("August 2005 MOA") between Energy Trust and PacifiCorp "to establish the terms and conditions, including but not limited to those relating to cost allocation, by which they hope to garner cost-effectiveness and administrative efficiency in the development, administration and evaluation of the Jointly-Administered Irrigation Programs." The MOA was executed after the PMC had been informally selected in response to the bids received, but prior to contracting with the PMC.

Energy Trust and the PMC entered into a Program Management Services Agreement with an effective date of October 1, 2005. The PMC entered a separate contract with PacifiCorp.

Energy Trust executed revisions to the two contracts (the MOA and the contract with the PMC) on September 1, 2006 to establish procedures for program phase-out in Oregon.

These contracts are discussed in more detail in the following sections.

4.4.1 Contracting Between Energy Trust and PacifiCorp

Perhaps the single most important contracting issue and, consequently, implementation issue was the need to ensure that Oregon ratepayer money was spent to the benefit of Oregon ratepayers, and California ratepayer money was spent to the benefit of California ratepayers.[5] Joint program implementation was undertaken in part because it was expected the two sponsors would attain lower per-entity implementation costs by splitting fixed costs that otherwise would have to be borne in their entirety by a single sponsor. Such fixed costs include those associated with marketing and the development of outreach materials, a program Web site, program forms, IT (information technology) support, quality assurance, and program evaluation.

The August 2005 MOA (and consequently, implementation procedures) carefully delineated the cost components to be shared and the cost components associated with Oregon- and California-specific activities. The contract specified the tracking of these components, the preliminary allocation of shared costs between the two sponsors, and the method by which the allocation of shared costs would be reconciled to reflect actual program activities across the two states.

PacifiCorp agreed to conduct or, as necessary, contract for and pay marketing expenses and Energy Trust agreed to conduct or, as necessary, contract for and pay the costs of Web site development, IT support, and program evaluation. Each sponsor would bill the other sponsor for its share of costs, preliminarily determined to be a 60/40 split: Energy Trust covered 60% and PacifiCorp covered

[5] As illustration of the importance of this issue, just prior to the process evaluation interviews, the Oregon Public Utilities Commission required PacifiCorp to document that Energy Trust money used for program marketing was not used to market the program in California.

40%, based on the expected distribution of program savings, which in turn was based on the program managers' review of the number of accounts in each state and the rate schedules.

The MOA specified the careful tracking of costs and a reconciliation method at the end of the program to re-allocate costs based on the actual distribution of program savings. In addition, the MOA specified Energy Trust and PacifiCorp contracts with the PMC would require the PMC to track joint costs (such as in-person marketing and program form development), which were also to be split 60/40 as incurred and billed to the sponsors and subject to end-of-program reconciliation.

The MOA was revised on September 1, 2006 to enable reconciliation to occur in preparation for program phase out. It was agreed that all shared costs would be incurred by October 2006, when the reconciliation occurred. Each sponsor's proportion of shared costs would be capped at 60%. The revised MOA specified that payments between Energy Trust and PacifiCorp based on the reconciliation occur by the end of 2006. Subsequent to the reconciliation (the period from November 2006 through the program's end on July 31, 2007), Energy Trust tracks only program activity occurring in its service territory, with PacifiCorp independently tracking all program activity in California.

The contracts between Energy Trust and PacifiCorp were preceded by extensive thought, problem solving, and negotiation on the part of both sponsors. The tracking of program data proved to be a particularly difficult aspect of the program for which procedures needed to be established (who tracks what data where and how). The difficulties are discussed in Section 4.5.

Energy Trust and PacifiCorp each entered into separate contracts with the PMC, yet the basic terms and statements of work were coordinated, as well as the pricing and contract requirements. Similarly, both sponsors coordinated on the contracts that each sponsor independently entered into for the shared cost activities for which each sponsor was responsible.

In the words of Energy Trust contract manager, "Coordination between entities is always time consuming, as each party has different objectives, requirements, and language. Even something as seemingly simple as putting a date in an agreement is hard because one thing affects another. And throughout this complex program, each issue that we tackled raised ten more questions." Said the PacifiCorp program manager, "Energy Trust has its contracting process, and we have ours. Developing the statement of work and contract for the PMC was therefore a lot of work." Both sponsors agree contracting with the PMC would have been simpler had they not needed to coordinate. "But we thought the PMC needed identical instructions, regardless of the state it was operating in."

4.4.2 Contracting Between Energy Trust and the PMC

The Irrigation Initiative sponsors reported that the RFP for program management contractor (issued December 15, 2004) garnered fewer bidders than anticipated, and the submissions varied considerably in both their technical (e.g., energy efficiency measures and field activities) and cost proposals. Sponsors reported most of the cost proposals received were much higher than hoped for and too high to run a cost-effective program. Indeed, the PMC manager (i.e., the winning bidder) reported that after Energy Trust awarded his firm the work, the other bidders advised him the administrative costs of such a contract would be very high.

The final measures and activities included in the program reflected the strengths of the selected bidder. Energy Trust (supported by its advisors), PacifiCorp, and the PMC together negotiated the measures to be included in the program. The PMC had extensive experience conducting pump tests and had the support of the local conservation districts, so these features became key program

elements. The PMC manager reported it was on his recommendation that the program included a provision for pump adjustments, in addition to repair and replacement. He said in his experience an adjustment is sometimes the appropriate corrective measure and he didn't want to be in the position of recommending a pump corrective the program didn't support. The PMC manager said he came to regret this recommendation as specifying the contractual and programmatic details for pump adjustments entailed multiple iterations with Energy Trust. He described needing to address the comments made to the electronic draft documents by many diverse Energy Trust staff, which was time consuming and thus costly to him.

The sponsors had defined program measures and activities by the summer of 2005 and Energy Trust was ready to launch the program. However, one of the pre-conditions specified in the MOA as necessary for the program to go forward was approval of the program by the California Public Utility Commission (CPUC), which had not yet been granted.

So as not to miss the 2005 growing season in its entirety, Energy Trust requested the PMC begin pump testing in Oregon in June as a subcontractor to Energy Trust's PMC for the Production Efficiency Program.

PacifiCorp received CPUC approval for the program July 28, 2005 and contracted with the PMC on an interim basis on August 5, 2005. On September 30, 2005, contracts were executed between the sponsors and the PMC for program delivery. The contracts specified a time and materials billing process, subject to caps (i.e., maximums for specific items) from the cost proposal.

Over the next year, both Energy Trust and the PMC grew very dissatisfied with how the other party was conducting program activities. At issue: program tracking and reporting, discussed in more detail in Section 4.7. As a result of their mutual dissatisfaction, the two parties entered into a revised agreement to govern the phase-out of program activities after the 2006 growing season. Under the September 2006 agreement, the PMC will continue nozzle exchange activities. It will no longer market the availability of pump tests, re-tests, repairs/replacement, and adjustments, but is instead only to provide services to customers that already knew of the program and specifically seek out the PMC. The PMC is no longer to direct customers to the NRCS EQIP process or to Energy Trust incentives.

Administratively, during the program phase-out period the PMC will no longer have access to GoldMine or FastTrack. The PMC will use its own tracking systems and provide Oregon participant data to Energy Trust monthly. Energy Trust will do all program data entry because it determined it could meet its standards more cheaply itself than by using the PMC.

4.5 Program Measures

Based on its discussions with growers and agencies active in the Klamath Basin, the sponsors issued an RFP to solicit a PMC that specified the following energy conservation measures: nozzle exchange, pump checks and water management consultations, and pump tests and irrigation system analysis. "Pump checks" were preliminary to "pump tests" to identify pumps for which tests would likely indicate the need for repair or replacement. The RFP sketched a program approach whereby the Irrigation Initiative would help growers access EQIP incentives, which cover 70% of project costs. Growers not receiving EQIP incentives were eligible from incentives for 30% of project costs from the Initiative sponsors.

Bidders' technical proposals suggested to the sponsors the need to rethink some of the measures suggested in the RFP. (Indeed, sponsor contacts recall that some bidders suggested the program

concept as presented in the RFP was not likely to be successful. All agree: "The bids that came in didn't look like what we sent out.") The sponsors decided they could not provide incentives for the water management consultations and irrigation system analyses that saved energy through changing growers' behaviors. The sponsors also decided to eliminate the screening step constituted by the pump check and just conduct pump tests.

While the measure mix changed over the course of the planning and actual implementation phases, the interviewed program staff and contractors stated an appreciation for the simplicity of the nozzle exchange. The nozzles are a prescriptive measure. Several consultants advised Energy Trust on the deemed savings value (9.2 kWh per nozzle). In contrast, the pump tests themselves provide no savings and any pump repair/ replacement savings are custom, not prescriptive. The program managers liked the flat fee provided to the PMC for the nozzle exchange, in contrast to a scheme that might offer different incentives for different types of nozzles or applications.

While Energy Trust was in negotiations with the selected bidder (the PMC-to-be), it was also in negotiations with NRCS staff about how the two programs would work together. Energy Trust hoped the NRCS might in some way assure funds for pump repair/ replacement, so that growers applying to the EQIP program might expect it would fund their repairs/ replacements. The NRCS has program staff in Oregon and California; the California representative was more responsive to the idea of the two programs working together than was the Oregon representative, yet neither was able to guarantee pump repair/ replacement requests would get funded. Ultimately, the negotiations succeeded in establishing that pump repairs would indeed be eligible for EQIP incentives. All applications that included pump repair and replacement items would be considered in comparison with all other applications received.[6] In the words of one contact, "EQIP's true job is to do major system changes. NRCS added a little clause to say they would do pump repairs. But they prioritize system changes if the available funds are less than the demand."

4.6 Program Marketing

PacifiCorp took the lead on program marketing. According to the PacifiCorp program manager, messaging in the Klamath Basin was very sensitive, So PacifiCorp sought input from Energy Trust and the PMC on the content. Yet it was the perception of the RCD staff that Energy Trust was the more visible sponsor of the program, presumably because PacifiCorp wanted to keep out of the spotlight during this period of contentious rate increase. According to RCD staff, "When I received an email of a press release, it was from Energy Trust. And the meetings I had about marketing were with Energy Trust staff."

The program was marketed in Oregon and California through:

- Press releases—in 2005 and 2006;
- In-bill messages—in August and September 2005 and February, April, and June 2006;
- Customer mailings—two mailings of a letter and a program brochure, with a detachable coupon customers could mail in to request a pump test;
- Newspaper ads—in six papers during two weeks in September 2005 and four weeks in February 2006;

[6] Note that this assurance from NRCS was received while Energy Trust was in negotiations with the PMC, not during the program planning period, as would be optimal.

- Radio ads—on six stations during two weeks in September 2005, two weeks in April 2006, and two weeks in June 2006;
- Web site—http:\\www.irrigationinitiative.net;
- E-mail address—info@irrigationinitiative.net; and
- Letterhead and envelopes—co-branded and designed for the PMC's use.

In addition, RCD staff marketed the program in-person by talking with groups (the growers' associations, the farm bureau, the regional water district office) and individuals. Staff estimate that about half of the pump tests resulted from personal contact. In the words of RCD staff, "Everywhere I went I talked with people. I called people and signed them up."

The NRCS planners involved with the EQIP program directed growers with whom they were working to the Irrigation Initiative, which RCD staff reported as a significant source of program contacts.

The RCD staff reported noting increases in growers contacting them to participate after the radio ads aired. The interviewed PMC contacts reported few growers contacted the program through the toll free telephone number—perhaps a dozen. About five times that many mailed in the brochure card. Most growers spoke directly with the RCD staff, "often showing up with the brochure card in hand."

Because the Oregon legislature and California Public Utilities Commission ruled the rate increase would be phased in, the program could no longer count on a sense of urgency among customers. "We told the PMC, 'Make sure customers know this is a limited time offer. This deal will go away. The time to act is now'", said an Energy Trust person.

The interviewed PMC contacts expressed the opinion that the advertising was "out of sync" with the market and how the program was run. "We wanted short ads and articles that were easy to read and had the pertinent information. We would get long-winded things. And they kept publicizing the 800 number [a toll free number set up for the Irrigation Initiative]. But the 800 number didn't connect to RCD staff, who scheduled the pump tests. So growers had to make three or four calls to reach the scheduler. This could have been avoided."

The RCD staff responded to what they perceived as inappropriate ad copy—especially in the press releases—by issuing press releases themselves, including a notice in the OSU newsletter. Growers' comments reinforced their opinions, as growers commented on which information source got their attention. "The press releases the sponsors put out—it seemed like everyone wanted to get their name in the article. The articles were long-winded and difficult to read, so the growers didn't really understand what was going on. Growers in the Basin recognize the Conservation Districts as run by farmers and ranchers who understand their needs. The press releases we issued had only the essentials: 'The Conservation Districts are providing free pump tests. Call __(the local contact)__ at ___.' And these ads worked."

4.7 Program Activity Tracking and IT Activity

The discussion of program contracting (Section 4.4) indicates the complexity of the program activity tracking task to ensure that Oregon-specific, California-specific, and joint expenditures were clearly tracked and documented. Energy Trust decided all program tracking (both Oregon and California activity) needed to be in a single, centralized location—which in practice meant in FastTrack, Energy Trust's tracking system—in order to support the reconciliation of allocated costs based on program savings. Energy Trust and PacifiCorp needed to agree—and subsequently, the PMC needed to

agree—on such things as what information was needed on the forms and how the two sponsors process payments for sponsor-specific activity.

The PMC's contract required incentive requests to be submitted by the PMC to Energy Trust via FastTrack weekly. Every payment request was required to be pre-approved by four different staff authorized to do so, two PMC and two Energy Trust staff.

The 2005 MOA identified the following pre-approved shared costs: (1) the PMC's initial start-up activities and management and delivery in recruiting, negotiating, executing, and maintaining contracts with the nozzle suppliers and/or pump companies; (2) the PMC's management and delivery in performing data entry and report writing when those costs can not be specifically identified as a state specific only; (3) the PMC's initial start-up activities and management and delivery in developing and printing joint forms when those costs can not be specifically identified as a state specific cost only; and (4) the PMC's management and delivery of marketing and community outreach when those costs can not be specifically identified as state specific only. If the PMC had any question about an activity, it was instructed to notify both Energy Trust and PaciCorp to request written pre-approval from each sponsor to add it to the list of agreed upon shared costs.

Although Energy Trust program manager thought the PMC understood how to track shared costs, it became evident from the PMC's invoices that this was not the case. After numerous discussions over many months, Energy Trust program manager resorted to a micro-management approach (i.e., he laid out increasingly detailed expectations). Energy Trust program manager reached agreement with PacifiCorp that the PMC's monthly status reports would be backed by detailed timesheets and an Excel summary of the timesheets to capture activities conducted to benefit solely Oregon ratepayers, solely California ratepayers, and to benefit the ratepayers of both states. The timesheets and Excel summary tracked fifteen subtasks—five associated with nozzle exchange, three associated with marketing, three associated with data entry and report writing, and four associated with form development and tracking. The spreadsheet was in turn to be supported by the timesheets used by staff working on the program.

This detailed tracking was completely beyond the expectations of the PMC, who had extensive experience conducting pump tests under other utility programs on a flat fee basis and whose cost proposal to Energy Trust specified flat fee billing. The PMC manager reported discussions between himself and the first Energy Trust program manager assumed flat fee billing. Further, PacifiCorp was satisfied with flat fee billing. According to the PMC manager, "With the flat fee approach, I eliminated almost all of the administrative costs, which was necessary for me to cover my costs and the program to be cost effective."

As noted, the PMC manager began work on the program in the summer of 2005 as a subcontractor to the Production Efficiency PMC, while its PMC contract was delayed pending the California PUC's approval of PacifiCorp's proposal to offer the program. When the PMC was offered a contract to sign in October 2005, the PMC manager reported he was surprised that costs were to be billed on a time and materials basis, even though his proposal had specified otherwise. But as his firm was already in the field, conducting pump tests and establishing relationships with growers, he decided to go ahead and sign the contract. Said the PMC manager, "I had promised clients two years of pump testing. I would have looked like an idiot had I gone back to them and said 'Never mind.'" Thus, the situation unfolded such that the PMC and Energy Trust became at loggerheads on the tracking of program cost elements, especially shared costs.

Adding to the complexity of distinguishing and tracking activities as to their pertinence to Oregon and California, the state of California has extensive privacy laws, including very specific customer

confidentiality requirements that govern the data the utilities may track. In order for Energy Trust to feel secure about having information on California customers in its tracking systems, Energy Trust made sure the PMC attained signed customer releases. These releases enabled program participant data to be captured in FastTrack. A signed release was needed for each form a customer submitted; the customer could request multiple pump tests on a single form, but if multiple forms were used, multiple signatures were needed. No data on California prospective participants could be entered into Goldmine, Energy Trust's contact management system, as these contacts would not have signed any releases.

Energy Trust also erected a firewall within the FastTrack system to insulate the California customer data and protect it from FastTrack users not associated with the Irrigation Initiative. Yet the firewall proved too effective in restricting access; PacifiCorp therefore verified customer eligibility and provided billing data to the PMC for Oregon as well as California customers. PacifiCorp also verified the state the meter was in, as a check on the state reported by the PMC based on its analysis using GPS and mapping software.

According to the PMC, in addition to all of these issues, a considerable portion of the his activity is not amenable to tracking in FastTrack. Along with accounting issues, FastTrack is designed to track installed efficiency measures and their associated energy savings. For the Irrigation Initiative, installed measures are the nozzles and the pump repairs/ replacements/ adjustments. The pump tests are not associated with any energy savings, yet needed to be tracked. The PMC reported that entering pump test prospects and activity data into Goldmine and FastTrack was the equivalent of the proverbial "round peg, square hole" problem. The potential for any pump savings cannot be known until after the test, are not attained until after the repair/ replacement/ adjustment, and are not confirmed until after the re-test. This situation is uncommon, if not unique, among Energy Trust programs.

The PMC manager reported, "We had to touch each pump test five times. We had to do the test, enter it into our system [which analyzes the data], enter data into a spreadsheet and send to Energy Trust, get information back from Energy Trust, enter it into our system, and then report final data back into FastTrack." The PMC had hoped to upload data from its analysis/ database system to FastTrack, but Energy Trust did not allow this, citing security reasons and data integrity issues.

4.8 Program Administration Summary

Both Energy Trust and PacifiCorp were committed to delivering the same program on both sides of the state border. Yet the two organizations have different missions, constraints, standard procedures, and cultures. Consequently, the staff of the two organizations had different visions for the program and different ways they approach program issues.

The mission of Energy Trust is to deliver cost-effective energy savings to its customers and it does so under a great deal of scrutiny (staff refer to it as "triple oversight"—Energy Trust Board of Directors, the Oregon Public Utilities Commission, and the Oregon legislature) in a somewhat precarious political environment. Energy Trust has evolved very specific procedures to ensure quality control and documented energy savings. Accordingly, its procedures and systems are unaccommodating.

As described, the program design and implementation necessitated that many issues be resolved. According to contacts, "We [the sponsors] didn't see eye to eye on what was necessary, and a lot of negotiation was needed to get what would work for both of us."

For example, Energy Trust implements its programs using a PMC, while PacifiCorp manages some of their programs with in-house staff and manages others using third parties. Energy Trust staff note that even among utilities and agencies that use a PMC for program implementation, Energy Trust is unusual in its approach. "We are very engaged in the implementation process, developing strategies, overseeing delivery. Most utilities use a turn-key model, a hands-off approach. They stand back and manage the contract but don't direct and oversee the program."

Energy Trust and the PMC also had divergent views as to the role the contractor should play in program implementation. The PMC came to the program with decades of experience in California conducting pump tests. It has proprietary pump test analysis software and project tracking system. The PMC's view, largely shared by PacifiCorp, was that the sponsors hired it to conduct pump tests, that the pump tests needed to come in at a certain price for the program to be cost-effective, and that it (the PMC) was primarily called upon to deliver the pump test service it was skilled at delivering.

Energy Trust's view was that its first obligation is a fiduciary one to the Oregon public benefits ratepayers. To this end, Energy Trust financial staff conduct quarterly audits of the applications in all programs, checking for completeness and accuracy of the applications, of the data recorded into FastTrack, and of the documented program actions and savings estimates. In hiring a PMC to implement a program, Energy Trust is hiring a contractor to assume responsibility for both program activity and the completeness and accuracy of program activity and data.

As an example of how the divergent views of Energy Trust, PacifiCorp, and the PMC unfolded, consider the use of FastTrack for program activity tracking. Energy Trust was adamant that all costs and savings be captured in FastTrack to facilitate the end-of-pilot reconciliation; further, FastTrack is the system Energy Trust uses for all of its programs and is integral to its quality assurance efforts. The PMC has its own proprietary data analysis/ project tracking system. Using FastTrack is time consuming even for experienced users. The Irrigation Initiative had the additional complexities of shared costs, privacy of California data, and the fact that pump tests are not in themselves efficiency measures, but are the precursors to pump repairs/ replacements, which garner the energy savings. The PacifiCorp manager became increasingly frustrated that the utility had to pay the PMC to meet Energy Trust data tracking requirements for California customers. Thus, Energy Trust and PacifiCorp grew further apart on this issue as the program continued. In the words of Energy Trust staff, "The PMC had two masters."

As part of the seamless implementation of the Initiative, a single set of customer participation forms needed to be developed for each measure (nozzles, pump tests and retests, pump repair/ replacement incentives, and pump adjustments). The sponsors reported each organization has its standard approach to form development. Early on, PacifiCorp agreed to use Energy Trust's approach to forms. Although that encompasses a format, the PMC reported that nonetheless considerable time was spent "wordsmithing" the forms, with one PacifiCorp and many Energy Trust staff commenting. Energy Trust staff reported that the structure of program forms is critical to ensuring data integrity throughout the program.

From the PMC's perspective, program tracking requirements were onerous and tracking systems were time consuming to use. From Energy Trust's perspective, program tracking was not occurring in a timely fashion and some requirements were not being met. The longer Energy Trust program manager interpreted the PMC as unresponsive, the more Energy Trust program manager micro-managed the contract. The longer the PMC manager experienced micro-management, the more onerous and costly to the PMC the already complex requirements became.

In retrospect, Energy Trust staff involved with the Irrigation Initiative believe the firm it selected to be PMC would have better served the program in a strictly field capacity, such as Program Delivery Contractors serve as the field staff for the Production Efficiency Program. Based on the contractor's activity in the Irrigation Initiative, Energy Trust staff do not feel the selected contractor had the administrative capability to serve in the capacity of PMC as Energy Trust has evolved that role, and all agree the selected contractor had no interest in serving in that role.

4.9 Measure Implementation Results

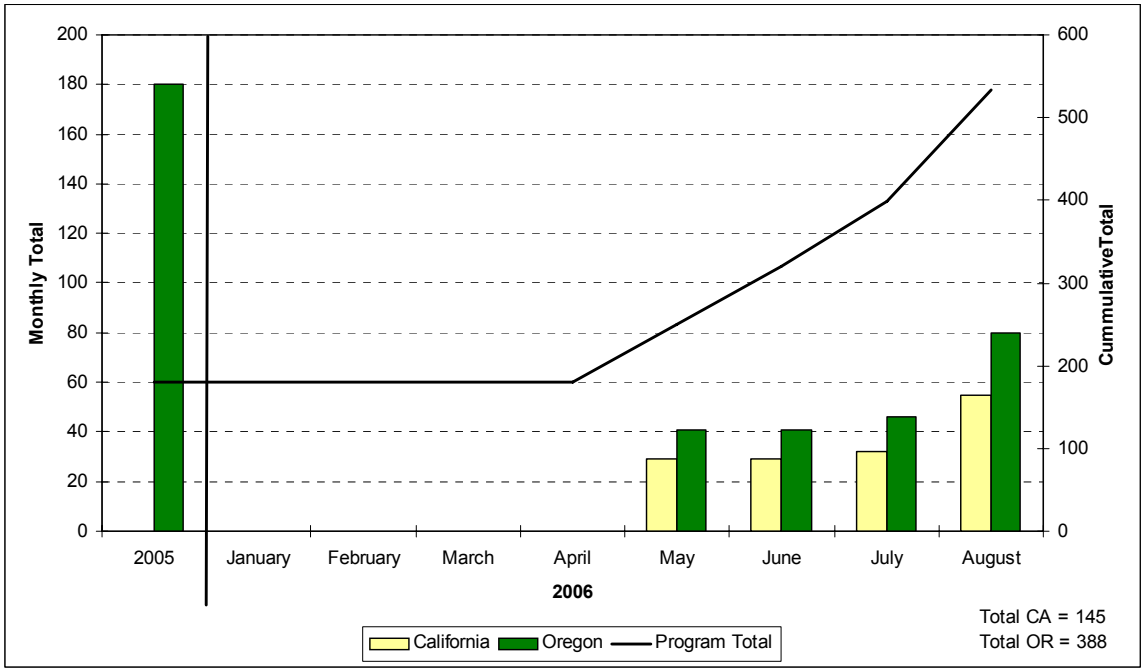
The IIP had specific goals for the measures installed in Oregon. These goals were detailed in the scope of work for the PMC. There were eleven months in which the PMC ran the program before the choice was made to split some of the specifics about how the pilot would be run. Because the program was originally slated to run another eleven months, the original goals were halved when considering the percent of the goal met by the PMC (Exhibit 4.1). The data for the actual measure implementation are from two sources, the written monthly reports from the PMC for 2006 and an extract from Energy Trust FasTrack system. However, that there are known lags between when data are entered in FasTrack and actual implementation, especially for pump repairs.

Exhibit 4.1
Program Measure Goals and Implemented Measures for Oregon

Measure	Original Goals	Half of Goals	Actual (10/0/05 to 8/31/06)	Percent of Half Goal
Pump Tests	1,164	582	388	67%
Pump Test Plus Adjustment	36	18	0	0%
Pump Repair	240	120	0	0%
Pump Retests	240	120	0	0%
Nozzles Exchanged	65,000	32,500	14,515	45%

As mentioned earlier, the IIP was conceived with knowledge about the irrigation season in the Klamath Basin. The months of May through September were the main irrigation season and the time when pump tests were slated to occur. Pump repairs were expected to occur in the non-irrigation months. About half of the pump tests occurred in August and September 2005 while the remainder took place in May to August 2006 (Exhibit 4.2).

Exhibit 4.2
Pump Tests by State, Year, and Month

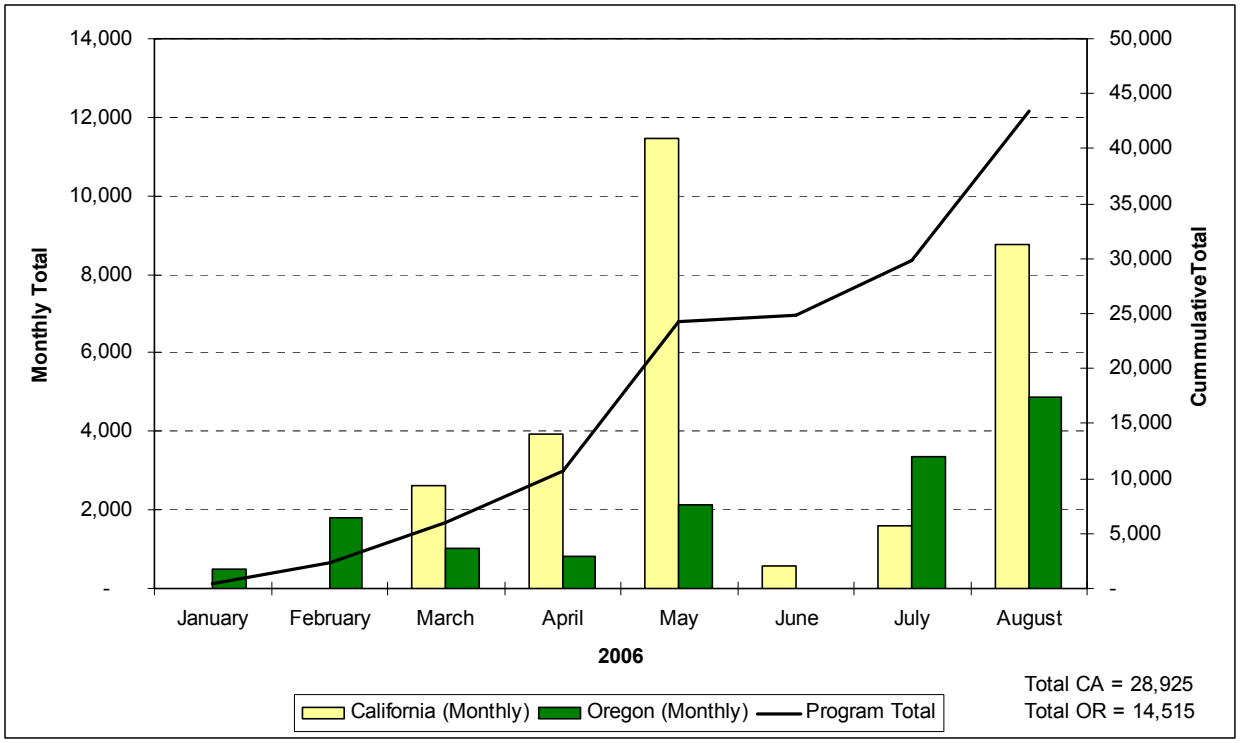


Oregon had over twice as many pump tests as California for this period of time. The program had expected 20 pump tests for every single pump repair. This matches with the California Agricultural Pumping Efficiency Program (APEP) that ran between 2002 and 2006. In APEP, there were 17.9 pump tests for every pump repair. Of note, though, was the lag between pump tests and pump repairs seen by the APEP. The first two years of APEP saw two-thirds of the pump tests while the last two years had eighty percent of the pump repairs.[7] Given the number of pump tests, about 19 pump repairs could be expected in Oregon with this type of lag. To date, no pump repairs have been paid by Energy Trust. However, as noted in Section 4.10.4, four of the customers interviewed did indicate they had at least ten pump repairs as recommended by the pump tests, but did not apply for Energy Trust incentives.

Nozzle exchanges were originally projected to occur in January to April 2006. As can be seen in Exhibit 4.3, there was a gradual increase in the number of nozzles exchanged per month with many nozzles exchanged in May and August. With a deemed savings of 9.2 kWh per year per nozzle, and assuming that all the nozzles exchanged were installed into an irrigation system, the nozzles indicated to be for Oregon growers provides savings of 133,538 kWh/year (0.02 aMW). The average life of a nozzle is assumed to be 3 years, which provide 400,614 kWh for the lifecycle of the nozzles.

[7] *Errata Report for the Evaluation of the Agricultural Pumping Efficiency Program I (CPUC Project 230-02ABCD).* March 10, 2006

Exhibit 4.3
Nozzle Exchanges by State and Month



4.10 Pump Test Participants

The fifteen growers surveyed provided some firmographic information as well as data on how they perceived the program. The number of pumps each of the interviewed growers had tested through the program ranged from 1 to 21, with a total of 73 pumps tested for all 15 of these growers. All types of irrigation systems were served by the pumps of the interviewed growers, with the most common type of irrigation system being wheel lines (Exhibit 4.4). Some pumps were indicated to be used for wells or as lift pumps.

Exhibit 4.4
Irrigation Systems and Uses Served by Tested Pumps
(Multiple Responses Allowed)

IRRIGATION SYSTEM OR USE	NUMBER	PERCENT (N=15)
Wheel lines	13	87%
Hand lines	6	40%
Pivots	5	33%
Flood	2	13%
Solid set	2	13%
Well pump	2	13%
Lift pump	1	7%

4.10.1 Program Experiences

The most common ways in which the interviewed growers learned of the availability of free pump tests were from the newspaper, the Resource Conservation District, and word of mouth, in that order (Exhibit 4.5). Word-of-mouth communicants included a business partner, the seller of the property, and a friend. "Other" ways in which the contacts reported learning of the free tests were from the County Extension Office and the radio.

Exhibit 4.5
How Learned of Free Pump Test
(Multiple Responses Allowed)

MEDIUM	NUMBER	PERCENT (N=15)
Newspaper	6	40%
Resource Conservation District	5	33%
Word of mouth	4	27%
Other	2	13%

Reasons given by the interviewed participants for deciding to have their pumps tested were varied. The most commonly mentioned reason (given by 7 of 15 respondents) was simply to check the efficiency of the pumps (Exhibit 4.6). In addition to the reasons listed in the table, "Other" reasons for having pumps tested, mentioned once each, were to establish a baseline, to reduce water use, to reduce energy use, and "because somebody wanted it done."

Exhibit 4.6
Reasons for Program Participation
(Multiple Responses Allowed)

REASON FOR PUMP TEST	NUMBER	PERCENT (N=15)
To check efficiency	7*	47%
To take advantage of free test	3	20%
Electricity rate increase	2	13%
Part of EQUIP	2	13%
To determine ability to add wheel lines	2	13%
Other	4	27%

*Two of these seven were new owners assessing the efficiency of their equipment.

4.10.2 Program Website

The interviewed growers were not particularly Internet savvy. Two contacts had visited the program website. One of these two contacts rated the usefulness of the information on the website as neither satisfactory nor unsatisfactory (a rating of "3" on a five-point scale) while the other one had no opinion about the website information's usefulness.

4.10.3 Pump Test Reports

The most common recommendation made to the contacts based upon the pump test results was no action was needed because the pumps were performing satisfactorily. Roughly one half (eight of 15) of the contacts received this recommendation (Exhibit 4.7). The seven remaining contacts received a recommendation to repair and/or to replace one or more their pumps. Nozzle replacement was also recommended to two of these seven contacts. Of the seven contacts who received a recommendation to repair and/or replace pumps, two contacts reported receiving a follow-up call from the Resource Conservation District.[8]

Exhibit 4.7
Pump Test Recommendations
(Multiple Responses Allowed)

RECOMMENDATION	NUMBER	PERCENT (N=15)
No action needed	8	53%
Repair pump	4	27%
Replace pump	4	27%
Replace nozzles	2	13%

4.10.4 Responses to Pump Test Report Recommendations

Among the seven contacts who received a recommendation to repair/replace pumps and/or to replace nozzles, two reported taking all of the recommended repair/replacement actions, and two reported taking some of those actions. Neither of the two contacts who took all of the actions recommended by their pump test report applied for an incentive for their pump repairs or replacements. Both of them explained the reason for not doing so was the amount of time required to obtain an incentive. One of them said, "It was an issue of the narrow window of time for the replacement not allowing time for the incentive application procedure." The other contact reported he was told by Energy Trust it could take "as much as a year" to obtain an incentive.

The two contacts who had taken some of the recommended actions were the two contacts in the sample who had the largest number of pumps, 13 and 21. The grower with 13 pumps could not remember how many had been repaired, while the other contact had repaired, or was planning to repair before the 2007 growing season, a total of six or seven pumps. Both of these contacts reported receiving an incentive through EQIP for their completed pump repairs and/or replacements, and both of them reported it was unlikely (a rating of "1" or "2" on a five-point scale) they would have done the repairs/replacements without that incentive.

One of the three contacts who had not taken any of the actions recommended by the pump test report (pump repairs) indicated he was planning to take all of those actions before the 2007 growing season. He was unaware Energy Trust incentives were available to offset the cost of the repairs.

The second of the three contacts who had not taken any of the recommended actions did not know whether he would take those actions because he did not know whether the work would be approved

[8] While it is possible that the customers simply do not remember the follow-ups, this response suggests that the RCD may not have provided rigorous follow-ups to all customers.

through EQIP. The implication of his remarks was that he would take the recommended actions if he were to receive EQIP incentives.

The third of these three contacts reported the recommendation in his pump test report (pump replacement) was made because his pumps were under-utilized. Instead of replacing them, he was planning to increase his irrigation and use them at full capacity. He reported being unaware of incentives for pump replacement.

4.10.5 Results of Repairs/Replacements

Improvements in their pumps' efficiencies were reported by three of the four contacts who took some or all of the actions recommended by their pump test reports. More specifically, one contact reported he had noticed a reduction in his pump's energy use, and two contacts mentioned their pumps are pumping an increased volume of water. The fourth contact reported insufficient time had elapsed since his pump repairs/replacements for him to be able to determine whether energy use had been reduced. All four contacts who repaired/replaced pumps reported they would have chosen to go through with the pump tests and the pump repairs/replacements even if they had known at the outset what their experiences would be, an indication of satisfaction with their actions and outcomes.

4.10.6 Program Satisfaction

Satisfaction was high with most of the thirteen program aspects about which the contacts were asked. For 10 of the 13 program aspects about which the contact were asked, roughly three quarters (11 contacts) or more reported satisfaction (a rating of "4" or "5" on a five-point scale (Exhibit 4.8). Four program aspects, including ease of contacting program staff, speed with which calls were returned, speed with which pump tests were scheduled, and perhaps most importantly the overall program experience, were rated satisfactory by 14 of the 15 contacts (i.e., they provided a rating of 4 or 5). The program aspect that satisfied the fewest contacts was the clarity of information about incentives from Energy Trust. Only five of the fifteen contacts rated that information as satisfactory (three of these customers had tests recommending repair/replacement). Eight of the ten remaining contacts were not even aware Energy Trust had incentives for pump repair/replacement.

Exhibit 4.8
Satisfaction with Various Aspects of Program

PROGRAM ASPECT	NUMBER REPORTING A 4 OR 5*	PERCENT (N=15)
Overall program experience	14	93%
Ease of contacting program staff	14	93%
Speed of calls returned	14	93%
Speed of scheduling pump test	14	93%
Expertise of staff conducting pump test	13	87%
Ease of completing application form	12	80%
Clarity of information about value of test	12	80%
Clarity of pump test report	11	73%

PROGRAM ASPECT	NUMBER REPORTING A 4 OR 5*	PERCENT (N=15)
Usefulness of pump test report	11	73%
Usefulness of discussion with program staff	11	73%
Clarity of information on nozzle exchange	10	67%
Speed of receiving pump test report	9	60%
Clarity of information on incentives from Energy Trust	5	33%

*A five-point scale was used where 1 was "not at all satisfied" and 5 was "very satisfied".

Three contacts reported they had a follow-up inspection as part of the program's quality control activities. Two of them rated the inspection process as satisfactory (a rating of "4" or "5" on a five-point scale). The third contact had no opinion.

4.10.7 Previous Pump Tests

Six of the 15 contacts reported having pump tests conducted in the past (Exhibit 4.9). The previous tests were reported to have occurred from 2 to nearly 20 years ago. Four of these six contacts mentioned tests through PacifiCorp, and one mentioned receiving tests in a different location through Harney Electric Cooperative and BPA. The reason given by three of these six contacts for doing the previous tests was that they were free. The other three contacts each gave different reasons for doing the earlier tests, which were to reduce energy consumption, to establish a benchmark, and because of "an increase in power rates." Two of the six reported the earlier pump tests indicated they needed to repair and replace pumps, two others reported the earlier tests revealed their pumps to be in proper working order, and the two remaining contacts could not remember the results of their earlier tests.

Exhibit 4.9
Previous Pump Experience

BEFORE PILOT PROGRAM	NUMBER	PERCENT (N=15)
Previously tested pumps	6	40%
Previously replaced/repaired pumps without testing	11	73%

Roughly three quarters (11 of 15) of the interviewed growers reported they had previously repaired and/or replaced pumps without first testing them (Exhibit 4.9). Nine of these 11 contacts reported the frequency with which they typically repair/replace pumps is "as needed." One of these nine added that is about every two years. Another of these 11 contacts reported he repairs pumps about every four to six years, and the remaining contact reported he repairs/replaces pumps "when I buy a new place." The most commonly mentioned way in which these 11 contacts reported they know when a pump needs to be repaired or replaced (mentioned by seven contacts) is by the noise it makes, although collectively the various references to diminished performance were made by an equal number of respondents (Exhibit 4.10). "Other" mentioned indications of a need to repair or replace a pump were "heat," and "the pump breaks."

Exhibit 4.10
Indications of Need for Pump Repair/Replacement
(Multiple Responses Allowed)

INDICATION	NUMBER	PERCENT (N=11)
Noise	7	64%
Would not meet water demand	4	36%
Performance drop, still meeting demand	3	27%
Other	2	18%

4.10.8 Other Programs

Four-fifths (12 of 15) of the contacts reported they had heard of EQIP (the three who had not heard of EQIP had pump tests that indicated no action was needed), and most of those who had heard of the EQIP program (10 of 12) had applied for and received incentives through it (Exhibit 4.11). The projects for which their incentives were received were varied, and included converting to, installing, or upgrading pivots (four mentions), burying mainlines (three mentions), wheel line installation or retrofit (two mentions), and soil water reporting through flow meters and hydrometers, land leveling, conversion from ditch irrigation to a gated pipe, nozzle and pump replacement, and rebuilding head gates, mentioned once each. Neither of the two contacts who had heard of EQIP, but had not applied for its incentives, reported having plans to apply to the program.

Three of the contacts reported some of their land is in California. One of these three had heard of the California Agricultural Pumping Efficiency Program (APEP). That contact had not applied to that program for incentives, but said he was planning to do so.

Exhibit 4.11
EQIP and APEP Awareness and Activity

ACTIVITY/AWARENESS	NUMBER	PERCENT
Heard of EQIP (N=15)	12	80%
Applied for EQIP incentives (N=12)	10	83%
Had land in California (N=15)	3	20%
Heard of APEP (N=3)	1	33%
Applied for APEP incentives (N=1)	0	0%
Plan to apply to APEP (N=1)	1	100%

4.10.9 Other Energy Reduction Activities and Attitudes

Three-fifths (9 of 15) of the contacts reported they had taken various steps during the past two years, other than the pump tests, to reduce their business's energy consumption. These steps included burying mainlines (two mentions), participating in EQIP to reduce water usage and therefore pumping requirements (two mentions), and receiving one mention each, participating in a land idling program, adjusting the irrigation schedule to irrigate less, putting in an oversized mainline to reduce the pumping pressure requirement, adding a wheel line to an existing pump, going to flood irrigation

to avoid using a 140 horsepower pump, and changing from ditch irrigation to flood and sprinkler irrigation.

All of the interviewed growers reported they were aware there is an electric rate increase being phased in over the next few years.

In making decisions about purchasing irrigation systems and components, all but one of the contacts reported minimizing energy consumption is an important factor (a rating of "4" or "5" on a five-point scale), with 12 of these 14 reporting it is "very important" (a rating of "5" on a five point scale, Exhibit 4.12). Four-fifths (12 of 15) of the contacts reported minimizing water consumption is an important factor in their considerations about purchasing such items, with 10 of these 12 reporting it is a "very important" factor.

All but one of the contacts reported they were concerned about the impact of the planned electricity rate increase on their profitability (a rating of "4" or "5" on a five-point scale), with all but one of these 14 reporting they were "very concerned" (a rating of "5" on a five point scale) about that impact. In fact, one of these contacts reported his concern as "a 10."

Three-fifths (9 of 15) of the contacts reported they agreed (a rating of "4" or "5" on a five-point scale) that there were things they could do to use less electricity without sacrificing production. The two contacts who disagreed with that statement (both giving a rating of "2" on a five-point scale) both reported they have already made their operations as energy efficient as it is possible to make them.

Exhibit 4.12
Energy and Water Use Issues

ISSUE	NUMBER	PERCENT (N=15)
Importance of minimizing energy consumption	14	93%
Concerned about effect of rate increase on profitability	14	93%
Importance of minimizing water consumption	12	80%
Can use less electricity without diminishing production	9	60%

In addition to rating the foregoing issues, the contacts were asked to name the factors they consider to be the most important when deciding what irrigation system to install or system components to purchase. The factor most frequently mentioned by the contacts was energy efficiency. This factor was mentioned by roughly one half (7 of 15) of the contacts, and variously described as "price of operation," "energy requirements," and "saving electricity" among other phrases. There were also six mentions of the closely related notion of matching the equipment to the job to be done. System or component first cost and water efficiency were the next two most frequently mentioned "most important factors," mentioned four times and three times, respectively. Labor efficiency was mentioned twice, and "quality," "the ability to apply water evenly," "the people in business know what they're talking about," and the ability to maintain the system or equipment, or alternatively, the promptness of the service to maintain them, were mentioned once each.

4.10.10 Looking Forward

Four-fifths (12 of 15) of the contacts reported they were likely (a rating of "4" or "5" on a five-point scale) to request additional free pump tests, and 3 of the 15 contacts reported they were likely to pay for a pump test to determine the potential for saving energy (Exhibit 4.13). Four-fifths (12 of 15) of the contacts reported they were likely to investigate opportunities other than pump testing and repair or replacement to save energy. Interestingly, both of the contacts who reported there was nothing they could do to use less electricity without sacrificing production responded here by reporting they are "very likely" (a rating of "5" on a five point scale) to investigate other opportunities to save energy. These responses lend additional credibility to their remarks that they were already as efficient as possible.

All but one of the contacts reported they were likely to recommend to other growers they participate in the free pump test program, and roughly one half of them (7 of 15) reported they were likely to recommend to other growers they pay for a pump test to gauge potential energy savings.

Exhibit 4.13
Likelihood of Doing Certain Further Activities

ACTIVITY	NUMBER	PERCENT (N=15)
Recommending program participation to other growers	14	93%
Requesting additional free pump tests	12	80%
Investigating other energy saving opportunities	12	80%
Recommending to other growers they pay for pump tests	7	47%
Paying for pump test	3	20%

The contacts were also given the opportunity to make suggestions or comments about how the pump tests or pump test reports could be made more useful to growers. Six of them did so, making three suggestions about the report, and five suggestions about the program. Suggestions regarding the pump test report were to send the report sooner, to break the report's recommendations out more clearly so they are easier to find, and a suggestion made by a contact who did not receive a pump test report was simply to send a report of the pump diagnostics.

Four of the five suggestions for ways to improve the program included greater availability of information about the program, consideration of the volume of water and size of area irrigated in determining the efficiency of an irrigation system, explaining that a "a 60% efficient pump is about as efficient as they get," and repeating the tests about every "six or seven years."

The fifth program suggestion was in regard to the nozzle exchange component of the program. The contact who made this suggestion explained his irrigation pipes are stacked up during the winter months. As the program currently operates, he is required to bring in old nozzles in order to receive the new replacement nozzles. This requirement entails unstacking the pipes to remove the nozzles. The contact reported, "We didn't replace nozzles because it doesn't work for us to do it when the pipe is stacked up before installation in the spring." He added, "It would be easier if we could get new nozzles first and replace them as we put out the lines in the spring."

4.10.11 Pump Test Participants Summary

Overall, the 15 interviewed pump test participants are pleased with the Irrigation Initiative Program. The free pump tests available through the program revealed problems with the pumps of about half of those growers. All but one of those whose pump test reports recommended pump improvements had taken, or were planning to take, all or many of those actions. The remaining grower was not planning to take the recommended action because he was planning to use his underutilized pumps at full capacity, rendering the recommendations for those pumps moot. Most of those who had taken actions recommended by their pump test reports had noticed improvements in their pumps' efficiencies.

Three quarters of the pump test participants knew incentives for pump repair/replacement were available from EQIP; one third of participants knew Energy Trust offered such incentives. Two thirds were clear they had an opportunity to freely exchange their worn nozzles.

These growers are concerned that their irrigation systems and components use energy and water efficiently. They would recommend the Irrigation Initiative Program to other growers, would participate in the program again themselves, and expressed satisfaction with the program overall.

4.11 Pump/Nozzle Dealers

Of the six pump dealers interviewed, one worked only on pump repairs and one was a parts store which was involved only in the nozzle exchange component of the program. This parts store was a satellite of the larger company who has representatives in the field working with customers. The company that only performed pump repairs is not considered an active dealer within the IIP as they had no interactions with the PMC. However, their responses are considered when looked at any possible impact from the program for repairs. The same people were interviewed in November 2006 as were interviewed for the previous dealer assessment (November 2005) and the nozzle satisfaction assessment (March 2006) with one exception. One of the pump repair/nozzle dealers had a new employee. The previous employee had left the company in April 2006. His position was not filled until October 2006, leaving a gap in possible outreach for IIP as well as other duties needed by the company.

Satisfaction - Similar to the previous nozzle satisfaction survey, the dealers were very satisfied with the PMC. They unanimously indicated that the PMC provided them with information about the program as well as applications and guidance when needed. All felt that the PMC was timely and effective. in promoting the program to their company. All dealers were satisfied with the IIP as well. Even with the high level of satisfaction with the PMC and the program, one dealer was unclear about the low customer response and attributed it to possible lack of exposure about the availability of the program. (This was the company that had a missing employee for seven months.)

Program Impact on Dealers - There were no changes seen in the number of pump tests performed by the dealers. They continue to perform a relatively small number of tests (5 to 10 a year) and continue to indicate that pump tests are not viewed as a necessary precursor to determining whether to repair a pump. There was no difference seen by the dealers in the number of pump repairs performed during the past year. However, one dealer was not interviewed a year ago for the dealer assessment (as they were not part of the program yet). This dealer indicated they perform many times more pump repairs per year than the other dealers we interviewed (~1,000 per year versus <100). He indicated that they are seeing similar hp and pump types, though, and that they tend to service California more than Oregon.

The nozzle exchange program had an uneven impact on the dealers. As shown in Exhibit 4.14, Two dealers had a substantial number of nozzles exchanged through the program. Another dealer saw a small decrease in the number sold between the two years while the last remained about the same.

Exhibit 4.14
Nozzles Sold and Exchanged in 2005 and 2006

Dealer		2005 (pre-program)		2006 (program period)	
		Conventional	Flow Control	Conventional	Flow Control
1	Sold	DK	DK	17,000 - 18,000	1-2%
	Exchanged	0	0	17,000 - 18,000	1-2%
2	Sold	~500	~500	~500	~500
	Exchanged	0	0	~700	0
3	Sold	0	0	0	0
	Exchanged	0	0	10,0000 - 12,000	0
4	Sold	~2,000	~200	~700	Next to none
	Exchanged	0	0	~300	0

Rate Increase - The dealers felt that their customers were making some energy efficient choices. Two dealers indicated that their customers are putting in motors under 50 horsepower (hp) or using smaller and more efficient pumps. Previously, dealers felt that there was a trend towards pivot sprinkler systems, possibly as a result of the EQIP funding. This was again mentioned during these interviews. One dealer thought that some of the smaller growers would have to go back to flood irrigation because of the lower energy cost for this irrigation type.

4.12 Program Implementation Summary

While Energy Trust staff described the PMC as unresponsive or reluctantly responsive to its administrative requests, the staff believe the PMC did a good job in the field working with growers and nozzle vendors. This view of the field expertise of the PMC was shared by all interviewed contacts.

And according to the PMC manager, "Pump tests are all we do. We are just a tiny company. We do the work and hand you a bill. We are easy."

According to the RCD staff, field implementation went well. "From the point of the grower getting in touch with me to the completion of the pump test, it all went very well. And our relationship with [the PMC firm] is great. They are very easy to work with, willing to help with any type of problem, ready to go at the drop of a hat. And the growers had a lot of praise for the tester—he was punctual, quick with the tests, and gave them lots of good information." Said another contact, "The only problem with the program was the data tracking. The grower didn't see any of this."

Energy Trust's contract with the PMC included a statement that, as appropriate, growers would be referred to the Efficiency Production Program. Interviewed contacts reported no referrals were made. Even so, the PMC reported talking to growers about possible system changes. "I recently talked with a grower who wanted to replace three pumps with one pump with a variable frequency drive. I helped him figure this out."

The program brochure, website, and application forms all informed growers that both EQIP and the program sponsors provided incentives to repair or replace pumps as recommended by the pump tests. The RCD staff discussed the two incentive sources with the growers as well. This evaluation includes the results of a survey of participating growers that indicates much fewer growers recalled Energy Trust offered incentives as recalled EQIP offered them (see Section 4.10.11) This finding was discussed with RCD staff, who offered a possible explanation. The RCD staff recalled that in discussion of the available incentives, growers immediately focused on the 70% incentive offered by EQIP and typically asked a lot of questions about that, and typically asked few if any questions about the 30% incentive offered by the program sponsors. Thus, the RCD staff hypothesized, the growers subsequently had better recall of that which interested them more.

RCD staff went on to say they thought growers typically would prefer to pay for pump repairs themselves than to go through the effort of applying for and meeting program requirements for an incentive of 30%. This characterization is consistent with the findings from this evaluation's survey of participating growers. Five of seven participants who reported their pump tests recommended action said they had taken one or more of the recommended actions. These participants had either applied for EQIP incentives or had paid for the repairs/ replacements themselves.

All interviewed contacts agree the nozzle component of the program went well from an implementation perspective. "The nozzle exchange is by far the one thing that works in the program," reported one contact. "We worked with three local companies who were very good and incredibly easy to work with. My guess is these are the same people that help the growers with the EQIP paperwork. We fit into this long-term relationship. Whenever we could fit into an existing relationship—just changing the product—it went smoothly." Another contact said, "It was easy for growers to participate in the nozzle exchange. There was not a lot of paperwork. It was simple: bring in a bucket of nozzles and I'll give you a bucket."

One of the PMC contacts described the need for a nozzle exchange program thusly. "It's hard to make growers understand how much energy they waste with nozzles. They think, 'well, maybe the water is not getting out so well, but the pump is fine and that's what uses the energy so the energy use must be okay."

The RCD staff described the program approach to nozzle exchange as somewhat burdensome to growers, a finding corroborated by the comments of a program participant surveyed for this evaluation. The program requires growers turn in worn nozzles in exchange for new ones. Yet this requires growers to go through their line twice, once taking nozzles off and, some time later, putting nozzles on. It would be easier for them to have the new nozzles and put them on at the time they take the worn nozzles off. The current approach suits the tracking needs of the program sponsors; a reversed approached suits the needs of the growers. Nonetheless the RCD staff did not hear of any growers who refused the nozzle exchange because of the duplicate work required.

Interviewed contacts described two factors as relating to the outcome of a higher number of nozzles exchanged in California than in Oregon. One explanatory factor is that California growers are growing more row crops, whose irrigation systems involving more nozzles than the types of crops more commonly grown in Oregon, which are commonly served by wheel lines. In California, utility accounts may be associated with thousands of nozzles, while the nozzles associated with Oregon accounts typically number in the hundreds. Indeed, one California irrigator turned in "10,000 nozzles", according to interviewed contacts.

Another explanatory factor is the type of business conducted by the vendor offering the nozzle exchange. The vendor—located in California—responsible for by far the largest volume of nozzles

sells a variety of goods whose sales are not tied as closely to irrigation, and thus to the irrigation season, as the other vendors. In addition, this vendor is smaller than the others and more centrally located. The significance of the vendor characteristics is suggested by the somewhat skeptical comments made by an irrigation supplier in a conversation that occurred during program design. According to one of the program managers, the contact said "You will have to make this easy for us. We are at our busiest during the irrigation season. And that's when you are expecting us to do the nozzle exchange [with associated paperwork]."

In spite of all the program challenges, the RCD staff report they continue to appreciate the program. "I'd do it again even if it were more difficult, because it really needed to be done and it still needs to be done. I wish we had the ability to continue until we exhausted the need."

5 FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

There were numerous questions for which the evaluation sought answers. In this section, the key findings are provided first, followed by the conclusions and recommendations.

5.1 Summary of Findings

The Irrigation Initiative had a positive outcome from a field perspective in that those involved with the program agree there is a need for the program measures—nozzles, pump tests, and pump repairs. Comments of participating growers indicated high satisfaction with the pump tests, consistent with the perceptions of the implementation staff. The pump and nozzle dealers were very satisfied with the PMC and the program. There is agreement that the nozzle exchange worked well and was simple for participants, although it did require growers to make two passes through their equipment, first removing nozzles and then installing them.

There were no changes seen in the number of pump tests performed by the dealers. They continue to perform a relatively small number of tests (5 to 10 a year) and continue to indicate that pump tests are not viewed as a necessary precursor to determining whether to repair a pump. There was no difference seen by the dealers in the number of pump repairs performed during the past year. The nozzle exchange program had an uneven impact on the four dealers involved with the program. Two dealers had a substantial number of nozzles exchanged through the program. Another dealer reported a small decrease in the number sold between the two years while the last remained about the same.

Field contacts believe that many more pump tests could have been delivered had the program run unhampered for two full irrigation seasons. They report high levels of interest in the program among growers; consistent with this finding, surveyed participating growers expressed concern that their irrigation systems and components use energy and water efficiently. In fact, 93 percent of surveyed growers felt that minimizing energy consumption was important when purchasing irrigation system equipment, all but one of the growers reported they were concerned about the impact of the planned electricity rate increase on their profitability, and 60 percent of the growers interviewed stated they had taken some actions to reduce energy consumption in the past two years.

However, the collaboration between Energy Trust and PacifiCorp was hampered by their different organizational cultures, which in turn reflect their different regulatory oversight requirements. The regulatory oversight of Energy Trust has brought about systems that are inflexible. The political lines created by the differences between California and Oregon trumped the geographical realities of the Klamath Basin growers and the desire to provide a simply understood and effective agricultural energy efficiency program across state boundaries.

All contacts involved with the administrative part of the program agree that the program was administratively very complex, to the dissatisfaction of everyone involved in program implementation. Growers and dealers did not experience this complexity, as it stemmed primarily from issues of data tracking.

The administrative complexity spawned micro-management which had multiple consequences: it increased program costs, strained program relationships, and ultimately resulted in far fewer measures being delivered by the program than anticipated because the PMC effort was diverted into administrative tasks rather than field tasks.

Through September 2006, there was relatively low participation as 45 percent of the expected number of nozzles for this time period were exchanged and 67 percent of the expected pump tests

performed for this time period. There were zero pump repairs credited to the program as of the end of 2006.

A lack of understanding of grower pressures and constraints of the federal EQIP incentive program (i.e., apply in the fall and receive funding in the spring) combined with the administrative complexity resulted in no pump repairs or replacements being credited to the program. Even so, the survey of participating growers and the comments of program field staff suggest that growers nonetheless did conduct pump repairs and replacements as a result of pump test recommendations. However, with the change in PMC contract, there is no re-testing expected of these repairs and hence, no pump repair energy savings are expected to be credited to the program from these repairs.

With a deemed savings of 9.2 kWh per year per nozzle, and assuming that all the nozzles exchanged were installed into an irrigation system, the 14,515 nozzles indicated to be exchanged by Oregon growers provide savings of 133,538 kWh/year (0.02 aMW). The average life of a nozzle is assumed to be 3 years, which provide 400,614 kWh for the lifecycle of the nozzles.

5.2 Conclusions and Recommendations

Conclusion 1: In response to triple oversight from a board of directors, regulators, and legislatures, Energy Trust has evolved systems and processes that put its fiduciary responsibilities front and center, with very high standards of completeness and accuracy of actions, the tracking of actions, and the savings associated with the actions. Consequently, these systems and processes are not flexible. And they impose significant administrative costs that need to be offset by high program savings, so that on a per-kilowatt-hour-saved basis, the costs are low and programs are cost effective.

Recommendation 1A: Energy Trust needs to recognize its systems and processes are not flexible, having been designed to attain specific objectives. Energy Trust staff involved in program development need to keenly understand that "exceptions" to standard procedures—most significantly, the tracking of program activities—cannot be made.

Recommendation 1B: Should Energy Trust and another agency decide it might be mutually beneficial to offer a single program to customers, Energy Trust should clearly express to the other party that it needs to be the implementing agency. The other party could contribute to program design and would be asked to bear the costs of its participants, but Energy Trust is not able to work collaboratively; its systems and processes are fixed. However, because Energy Trust cannot be an implementing party in another state, collaboration across two states is not recommended in the future as the difficulties that arose are organizational and outside the ability of the program managers to overcome.

Conclusion 2: Following its established practice, Energy Trust's RFPs to solicit a PMC for the Irrigation Initiative requested contractor services to develop and implement a program. Also following established practice, the resulting contract for the PMC's services was relatively specific regarding the PMC's required activities, which assumes a program design. This process had the effect of limiting the contribution PMC team members could make to the articulation of program assumptions, design, and goals (in areas in which the PMC team members are considered to be experts), to the detriment of the Irrigation Initiative.

Recommendation 2: Energy Trust can continue to request PMC services through an RFP for program development and implementation, yet it should execute two sequential contracts with the selected firm, the first for program design/ development and the second for program implementation. This approach would enable Energy Trust to make better use of the technical and market expertise of

the winning bidder by increasing their role in program design, an expertise that is particularly important for programs targeting a community with an associated culture, be that a geographic community or community defined by some other criteria.

Conclusion 3: Judging from the EQIP program, federal programs also lack flexibility. The Irrigation Initiative was hampered by inaccurate assumptions regarding how it would leverage the EQIP program.

Recommendation 3: When considering how an Energy Trust program might leverage a federal program, it is important for program developers to clearly understand how the federal program operates, its timelines, and its criteria. The program logic should reflect both Energy Trust and federal constraints and should be developed in advance of contracting with a PMC for implementation services.

Conclusion 4: A primary factor underlying the Program's design was the planned rate increase. Without the planned rate increase of >500% the anticipated demand for program services was reduced.

Recommendation 4: Energy Trust should consider changing the design of, or even terminating, a program if major factors on which the program's success are predicated change.

Conclusion 5: Some program participants that received pump repair and replacement recommendations from the program pump tests had taken action on recommendations. None of the irrigators that took action applied for or received Energy Trust incentives.

Recommendation 5: If, and when, Energy Trust considers offering a pump test services as part of one of its programs research should be performed to see if the provision of free (or partially subsidized) pump testing with no incentive for a repairing the pump will result in a sufficient number of pump repairs and replacements to make the service cost effective.

Conclusion 6: Energy Trust's systems and processes, including the use of PMC, are not suitable for small programs.

Recommendation 6: When considering opportunities for small-scale programs, Energy Trust should offer such programs only if they can be conducted as an augmentation to services provided under a larger program or can be implemented by Energy Trust staff. Field staff for small-scale programs could work as Program Delivery Contractors under the direction of the PMC of a larger program.

A. APPENDIX A – ENERGY TRUST RESPONSE TO RECOMMENDATIONS

Evaluators Comment

Process evaluations look at multiple aspects of how a program works. Such evaluations attempt to look at areas that work well as well as those that have difficulty. Recommendations are made to help smooth out areas and create an efficient program. By their nature, process evaluations can bring to light areas of complexity which are researched thoroughly, but recommendations are made that may have missed certain nuances or overemphasize areas of smaller significance. This section provides Energy Trust of Oregon the ability to respond to our conclusions and recommendations. We looked closely at each response and made changes to our draft report on areas with which we concurred. Any changes between the draft and final report are so noted below.

Energy Trust of Oregon Comments

Staff Response to Energy Trust of Oregon's Pilot Irrigation Initiative Program Process Evaluation Report Conclusions and recommendations

Conclusion 1: In response to triple oversight from a board of directors, regulators, and legislatures, Energy Trust has evolved systems and processes that put its fiduciary responsibilities front and center, with very high standards of completeness and accuracy of actions, the tracking of actions, and the savings associated with the actions. Consequently, these systems and processes are not flexible. And they impose significant administrative costs that need to be offset by high program savings, so that on a per-kilowatt-hour-saved basis, the costs are low and programs are cost effective.

Recommendation 1A: Energy Trust needs to recognize its systems and processes are not flexible, having been design to attain specific objectives. Energy Trust staff involved in program development need to keenly understand that "exceptions" to standard procedures—most significantly, the tracking of program activities—cannot be made.

Recommendation 1B: Should Energy Trust and another agency decide it might be mutually beneficial to offer a single program to customers, Energy Trust should clearly express to the other party that it needs to be the implementing agency. The other party could contribute to program design and would be asked to bear the costs of its participants, but Energy Trust is not able to work collaboratively; its systems and processes are fixed. However, because Energy Trust cannot be an implementing party in another state, collaboration across two states is not recommended in the future as the difficulties that arose are organizational and outside the ability of the program managers to overcome.

Energy Trust response: *We agree that Energy Trust has, what many perceive as fairly rigid, requirements on how programs are report, tracked and administered. These requirements are for the most part a result of Energy Trust mission and our legal responsibilities. For example,*

- *state law only allows Energy Trust to spend Oregon rate payer money for the benefit of PGE and PacifiCorp customers,*

- *standard accounting requirements require timely delivery and documentation of invoices,*
- *IRS tax documentation requirements collection of tax information and confidentiality requirements.*

To comply with its contract with the PUC, Energy Trust also sets a high bar for itself in the tracking of savings and program costs. Effective tracking is particularly important for a pilot program, both to determine the benefits of the program and to understand what activities are worth continuing. The reporting of tracking and administrative requirements is clearly specified in all of our contracts and the report indicated that the PMC was aware of the requirements at the time the contract was signed. In any future PMC contract negotiations Energy Trust must ensure that PMCs are aware of the necessity to comply with these contract requirements and must ensure that the firm has the capacity and resources to comply with the contractual requirements.

In addition, Energy Trust is in agreement that the legal, contractual, and reporting requirements of Energy Trust and those of partnering organizations need to be carefully reviewed since they may put strictures on the scope of program partnerships. The goals, mission, management philosophies, accountabilities, and needed contractual requirements of potential partners may not be complimentary in all cases, and in some cases may conflict. Energy Trust has developed successful partnerships with many organizations to implement programs. A foundation of a successful partnership has been that Energy Trust and its partners have a clear understanding of each others operating environments and that these are explicitly and clearly taken into account in contracts and that each party to an agreement have a clear set of expectations. However, Energy Trust is aware that not every partnership results in synergies and will approach future partnerships with a clear view that synergies may be limited and that partnerships can potentially increase the contractual, administrative, and other costs associated with a program.

Evaluation Team: After discussing our conclusion, recommendation, and Energy Trust response, no changes were made within the final report.

Conclusion 2: Following its established practice, Energy Trust's RFPs to solicit a PMC for the Irrigation Initiative requested contractor services to develop and implement a program. Also following established practice, the resulting contract for the PMC's services was relatively specific regarding the PMC's required activities, which assumes a program design. This process had the effect of limiting the contribution PMC team members could make to the articulation of program assumptions, design, and goals (in areas in which the PMC team members are considered to be experts), to the detriment of the Irrigation Initiative.

Recommendation 2: Energy Trust can continue to request PMC services through an RFP for program development and implementation, yet it should execute two sequential contracts with the selected firm, the first for program design/ development and the second for program implementation. This approach would enable Energy Trust to make better use of the technical and market expertise of the winning bidder by increasing their role in program design, an expertise that is particularly important for programs targeting a

community with an associated culture, be that a geographic community or community defined by some other criteria.

Energy Trust response: *We are in agreement that when targeting a small group or specific region, consultation with the targeted stakeholders is needed and it is beneficial to consult with regional and industry specific experts.*

Energy Trust programs are designed by Energy Trust's planning department and the efficiency program staff with the input of experienced consultants and industry stakeholders. In this case, planning staff hired an expert contractor to design the program. While on-the-ground experts may feel they were not adequately consulted about program design, a significant effort was made to solicit and incorporate their input. The problem may have arisen because the program design changed significantly at least twice based on additional expert input. Some parties may have provided feedback on an early version.

When the design phase was over, it was determined that the implementation contract should be competed. The RFP process allows PMCs to offer approaches that fit into, or are alternatives to, the proposed framework. Once a PMC has been selected and contract negotiations are initiated additional, changes and additions to the program design are also considered with PMC input. In this case the contractor recommended significant changes to the program design, and some of these were incorporated. Adding an official design/development phase to our program implementation process appears to be redundant. We always consider input from program management contractors regarding savings and cost estimates, but use other experts to make sure their self-interest does not result in overly optimistic assumptions.

Evaluation Team: After discussing our conclusion, recommendation, and Energy Trust response, no changes were made within the final report.

Conclusion 3: Judging from the EQIP program, federal programs also lack flexibility. The Irrigation Initiative was hampered by inaccurate assumptions regarding how it would leverage the EQIP program.

Recommendation 3: When considering how an Energy Trust program might leverage a federal program, it is important for program developers to clearly understand how the federal program operates, its timelines, and its criteria. The program logic should reflect both Energy Trust and federal constraints and should be developed in advance of contracting with a PMC for implementation services.

Energy Trust response*: Staff agrees that the programs may have compatibility issues based on their objectives, schedules, and accountabilities. Energy Trust staff had great difficulty engaging the time and attention of overworked EQIP staff in the program design, and included coordination with EQIP as a key feature only in the final redesign, in consultation with the PMC. However, the EQIP program may work well for its stated purposes.*

Evaluation Team: After discussing our conclusion, recommendation, and Energy Trust response, no changes were made within the final report.

Conclusion 4: Energy Trust's systems and processes, including the use of PMC, are not suitable for small programs.

Recommendation 4: When considering opportunities for small-scale programs, Energy Trust should offer such programs only if they can be conducted as an augmentation to services provided under a larger program or can be implemented by Energy Trust staff. Field staff for small-scale programs could work as Program Delivery Contractors under the direction of the PMC of a larger program.

Energy Trust response: *We agree that we should review how we implement pilot programs and how we measure their success. The PMC model may not have been the best choice, but was also determined through the need for a PMC by our utility program partner.*

Pilot programs are intended to test implementation strategies and potential costs and savings at a small scale, and should assess only whether the program design has the potential to be cost-effective at a larger scale or over longer periods of time. Also, Pilot programs should consider focusing on testing implementation strategies and their success (e.g.,. pump tests result in repairs/replacements using EQIP and Energy Trust incentives, and whether repaired and replaced pumps provide sufficient savings to make the program cost effective) and do not necessarily require having the elements of a large scale program (1-800 number, website, etc.).

After discussing our conclusion, recommendation, and Energy Trust response, no changes were made within the final report.

Conclusion 5: Activity tracking for the Irrigation Initiative required the tracking of scheduled and completed pump tests; for neither activity can energy savings be ascribed. FastTrack is not designed to track program-delivered measures that lack energy savings, which increased the administrative difficulty of the Irrigation Initiative.

Recommendation 5: Before making the final decision to proceed with a program that implements measures as a precursor to the attainment of energy savings, Energy Trust should clearly specify procedures for tracking program activities in FastTrack. These procedures should be fully understood by the selected PMC or implementing party, and agreed to as part of the implementation contract.

Energy Trust response: *Staff does not concur with the conclusion as FastTrack is more like accounting software than savings tracking software. It can easily store all types of measure and accounting data. FastTrack is used to ensure prompt payment to PMCs for measures installed and services rendered. While we are constantly improving how we use Fast Track, we believe that the data requirements that are in dispute are basic, necessary information. Staff does concur with the recommendation that program tracking and administrative requirements be clearly specified in the PMC contract as was the case for this program.*

Evaluation Team: After discussing this conclusion, recommendation, and Energy Trust response, we chose to drop this recommendation from the final report.

Energy Trust also suggested two other findings/recommendations for the Evaluation Team to consider:

Finding 1: *A primary factor underlying the Program's design was the planned utility rate increase. Without the planned rate increase of >500% the anticipated demand for program services was reduced.*

Recommendation: *Energy Trust should consider changing the design of, or even terminating, a program if major factors on which the program's success are predicated change.*

Finding 2: *Of the seven program participants that received pump repair and replacement recommendations from the program pump tests, two had taken actions on all recommendations, two had followed through on some recommendations, and the remaining three were planning to take some action in the future (with their plans partially dependent on the availability of EQIP funding). None of the four irrigators that took action applied for or received Energy Trust incentives.*

Recommendation: *If and when Energy Trust considers offering a pump test services as part of one of its programs, research should be performed to see if the provision of free (or partially subsidized) pump testing will result in a sufficient number of pump repairs and replacements to make the service cost effective.*

Evaluation Team: After discussing these two findings and recommendations that were generated by staff at Energy Trust, we found them to agree with our assessment of the program. As such, we chose to include both recommendations in the final report.

B. APPENDIX B – NOVEMBER 2005 MEMO REGARDING PUMP DEALER BASELINE

November 23, 2005

MEMO

To: Spencer Moersfelder and Phil Degens, Energy Trust of Oregon

From: Mary Sutter, Equipoise Consulting Inc.

Re: Pump Dealer Baseline Survey Results

1 Overview

Equipoise Consulting Inc. (Equipoise) is performing the evaluation of the Irrigation Initiative Program (IIP), a joint endeavor by the Energy Trust of Oregon (ETO) and PacifiCorp. Part of that evaluation includes a baseline survey of the main pump dealers in the Klamath Basin. This memo provides the findings from the survey.

2 Surveyed Population and Method of Analysis

A baseline survey (provided as Attachment A) was agreed to on 11/9/05. Based on conversations between the ETO and Equipoise, the survey population was the participating dealers from the nozzle exchange program. Their names are located on the IIP website (three companies). On 11/9/05, emails were sent to the two pump dealers with an email address advising them of our interest in talking with them. Follow up phone calls to all participating dealers began on 11/10/05. Discussions with the first dealer indicated that there was at least one more main pump dealer in the Klamath Basin that probably should be surveyed. This company (Klamath Pump Center) was added to the population. All four surveys were completed by 11/15/05.

Each question that elicited responses from the dealers was qualitatively synthesized to provide a cohesive picture of the current market.

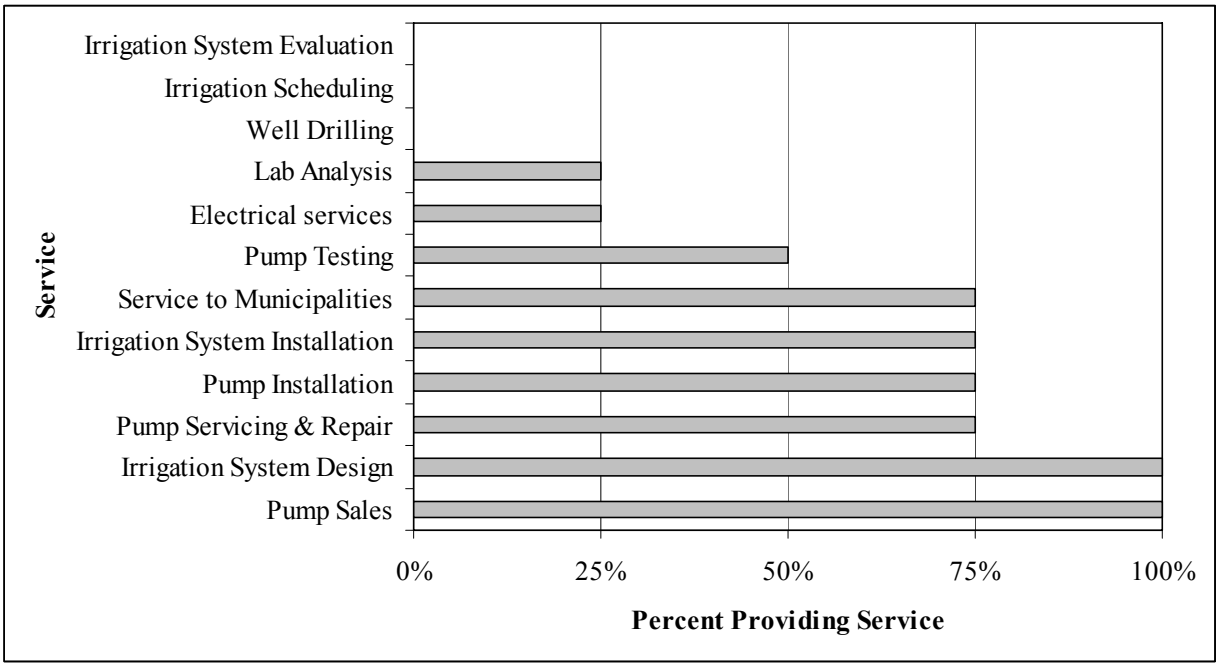
3 Findings

The findings are divided into three main areas: 1) firmographics, 2) baseline data, and 3) market information.

3.1 Firmographics

The firms were queried about the different services they offer. Exhibit 3.1 shows the breakdown of responses. The lab analysis offered is for water quality and the electrical services was noted to be “some” electrical services.

Exhibit 3.1
Types of Services Offered by Surveyed Companies



One company considered itself small, one medium, while the other two considered themselves as large businesses compared to others in the area. One has been in business at their location for 4-10 years while the other three have been in business over 10 years. Two of those three have been in business for at least 40 years.

3.2 Baseline Data

3.2.1 Pump Testing

While two of the firms indicated they performed pump testing, it became clear during the interview that neither company conducts pump tests specifically to determine efficiency of the pump. For these companies, a test is used to help determine the design for a new pump or irrigation system or to help a new land owner understand the characteristics of their pumps. The company suggests the test when it is needed to address a design issue while the landowner generally requests testing on newly purchased land. The tests are performed only on deep well turbines. In 2004, one company completed 10-15 tests while the other performed 30-40 tests. One company indicated that the number of pump tests has increased somewhat because recent reductions in available lake water were leading growers start putting in new wells.

The IIP program theory assumes that a clearly presented pump test with favorable economics would move the grower to repair their pump. While it seems from these interviews that the growers in the Klamath Basin may not be familiar with using pump test results to help inform a pump repair decision, one firm indicated that pump tests are being performed in California through the Agricultural Pumping Efficiency Program (APEP) and that Power Hydrodynamics (the IIP PMC) also performs pump tests in the Klamath Basin area. Consequently, the growers may be educated about how a pump test can help them ensure an efficient pumping system, but this survey does not capture that information.

While there is a possibility that APEP may continue in California from 2006 through 2008, it is not yet known. Depending on when the next survey of this population occurs, there may be an interesting outcome in the pump test market. If APEP is not re-funded, then IIP will be the only program available for testing in 2006. In 2007, according to the program literature, no new pump tests will occur in the IIP. As such, only Power Hydrodynamics (as a private company) or the pump dealers would be available to test pumps. If the growers begin to rely on free pump test results to maintain the efficiency of their pumps, whether they will pay for that service after 2006 is unclear. A survey of the pump dealers in mid-to late 2007 could allow the program to get a sense of whether the focus of pump testing for the dealers has changed.

3.2.2 Pump Repair

Three of the four dealers perform pump repairs for their customers. They may do the repair work in-house or pull the pump and send the assembly to a machine shop. None of the interviewees was able to provide a firm number of pump repairs in 2004. Ranges were provided with one firm indicating 50-75 repairs, another 10-30 repairs that he knows of (there are other salesmen in the company and he is unaware of their level of repairs per year), and the third stating ~50 repairs per year. There appears to be little swing in repairs from year-to-year. The repairs are customer requested and tend not to have had a pump test prior to the repair (although one firm indicated that about half of their repairs are based on the results from an efficiency test). One firm indicated that 30%-40% of the time a pump test is not needed, especially in certain areas. He provided the example of Butte Valley where there is a substantial amount of sand going through the pump. Because of this, the bowls wear quickly and the decrease in water pressure or flow is easily seen. A test is not needed to determine that a repair is required, according to him.

3.2.3 Nozzles

Three out of the four dealers sell nozzles to their customers. One dealer indicated that 11,000 conventional nozzles were sold in 2004, while another knew that their firm sold a couple thousand conventional nozzles. The third dealer differentiated between nozzles and sprinklers, indicating only about 50 nozzles sold last year and around 1,000 sprinklers sold. All were conventional nozzles. For the two dealers selling flow control nozzles, the number of flow control nozzles sold was factor of five lower than conventional nozzles (couple hundred compared to 1000). Variation in the number of nozzles sold per year were attributed to government water conservation programs and information provided to growers in seminars. One firm indicated that they discuss flow control nozzles when designing an irrigation system, but generally use conventional nozzles.

3.3 Market Information

The federal government program EQIP was known by all the dealers. According to them, the growers are using the EQIP funding for a variety of actions. Among them are:

- installing linear or center pivot irrigation (low pressure sprinkler applications),
- installing underground PVC piping to replace leaky aluminum pipes,
- moving surface pipe to underground pipe (reduces wear and tear on the pipe),
- upgrading from flood to sprinkler systems (both high pressure and low pressure),
- installing PVC solid set irrigation systems (reduces leaks and friction),
- putting in new wheel lines, and
- taking out open ditches.

None of the firms indicated that the growers are using EQIP funding to perform pump repairs.

First cost and labor saving potential are important to growers when making hardware decisions, according to the dealers. They seek an irrigation system that provides the best uniformity and crop yield. Service may be a small factor in their decision making. Interestingly, while three of the four dealers indicated that energy efficiency was very important, this did not show up in the reasoning behind purchase decisions. One dealer indicated that energy efficiency was not at all important in the Klamath Basin due to the energy rate, although he did indicate that the importance of energy efficiency is probably increasing due to the upcoming energy rate increase. Overall, the average rating of how growers viewed energy efficiency as estimated by the dealers was a 4 out of 5, where 5 is very important.

Water conservation was viewed as more important to the growers than energy efficiency, with an average of 4.75 out of 5. Only one of the dealers indicated that there were some customers for whom energy efficiency was not at all important. These growers use flood irrigation with gravity flow. According to this dealer, the Klamath Basin irrigation was historically designed for gravity flow flood irrigation and with the rise in energy rates some customers are thinking about reverting to that type of system. It is unclear how this practice would interact with the need to conserve water, though, as flood irrigation is the least efficient irrigation method.

All dealers were aware of the upcoming electric rate increases although only one of the four indicated they are making a special effort to work with their customers to help increase energy efficiency. Outside of any special energy efficiency effort though, the dealers are offering variable frequency drives to help growers with different flow needs for systems on the same pump, marketing PVC solid set systems, and selling electronic devices that balance current and can purportedly save energy. Some growers appear to be making some changes to help reduce costs in anticipation of the coming rate increase, but many are also taking a "wait-and-see" attitude to see the level of the increase. While one dealer thought that 80 percent of the growers have been looking at water and energy conservation over the last couple years in preparation for the rate increase, the others seemed to feel that a smaller number were actually taking action at this point.

There was consensus on the possible two year irrigation trends in the Klamath Basin – movement to center pivot irrigation systems was the largest trend mentioned. According to one dealer, the federally funded EQIP program has changed how the growers are doing business, and is the main driver in the trend to center pivot irrigation. Another trend mentioned by one dealer was the move to very low pressure drip tape in row crops. In this irrigation system, the grower uses a solid set for germination and dust control, but switches to drip tape later in the season. This practice seems to increase crop yield as well as save energy, but has a learning curve to find the best implementation process. None of the dealers appeared able to extend the possible irrigation trend to five years. As one indicated, 'What they do in five years will depend on the power deal'.

One dealer was comfortable in providing names of influential growers in the region. These tended to be the larger growers. Of the four growers mentioned, one has already participated in the IIP (through pump testing). Additionally, according to this dealer, there are several large growers in the region who do not qualify for EQIP because they are too large. This may have ramifications for the IIP.

4 Conclusions

As a baseline survey, the findings indicate that there are certain energy/water efficiency programs already in the region that appear to be influencing the current purchasing practices of growers in the Klamath Basin. All parties in the region are aware of the upcoming energy rate increases and are approaching the change with a mix of somewhat proactive and wait-and-see stances. First cost, crop yields, and labor costs are more important to growers when making purchase decisions than energy efficiency.

The Klamath Basin pump dealers do not perform pump testing for the purposes of determining the potential for decreasing energy use through a pump repair. They use the test to help design an irrigation system or when a new landowner needs information. The pump dealers performed less than 60 pump tests in 2004. There is an indication, though, that pump efficiency tests are occurring in the area through other avenues. The results of these pump tests appeared to be used as an impetus in some of the approximately 200 repairs by pump dealers that took place in 2004. As far as a baseline for nozzles, the majority of the approximately 16,000 nozzles sold in 2004 were conventional, with flow control nozzles lagging by a factor of 5.

There were a few items of interest that came out of the survey beyond the original question areas. One was the fact that the parts store for one of the nozzle distributors in the Klamath Basin area (Tulelake) is closed from now until early February. As such, any nozzles given out through the program until February will be through the other two distributors (in Klamath Falls). The other fact was that certain large growers were indicated by one dealer to be ineligible for EQIP funding. While a quick perusal of some of the EQIP application forms did not indicate that size alone was an eligibility issue, if it were true, it could affect the choice of IIP incentives by these growers. Additionally, the EQIP applications must be in to the local Natural Resources Conservation Services (NRCS) offices by the end of January to be included in that funding year (i.e., all applications for 2005 must be in to the local TRCS office by January 28, 2005). This can affect how the growers choose to use EQIP versus IIP incentives.

ATTACHMENT A

PUMP DEALER BASELINE SURVEY

ETO Ag Pump Dealers Baseline Data Collection Instrument

Hello, my name is Mary Sutter, with Equipoise Consulting. The Energy Trust of Oregon, in conjunction with PacifiCorp, has been offering an agricultural energy efficiency program in the Klamath Basin since last July. As one of the dealers of pumping equipment, I would like to ask you some questions about your current activities. Do you have time to talk to me?

Yes ..... 1 (GO TO **BEGINNING**)
No.....2
Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

Can we schedule a time to call you back? [OBTAIN NEW TIME _____OR T&T]

BEGINNING: The Energy Trust requires that these programs be independently evaluated. My company is performing the evaluation of this program. While the information I gather will be known to the Trust and PacifiCorp, there will be no attribution to the responses. As such, all your responses will remain confidential. I am interested in your experience in regards to pump tests, pump repairs, and nozzle replacement occurring at your dealership

S1. Are you the person best able to describe these activities at your dealership?

Yes .....1 [GO TO Q1]
No.....2
Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

S2. Who is the person better able to answer these questions?

_____Tel:_____ T&T

Don't Know (DON'T READ) Thank and terminate. 88
Refused (DON'T READ) Thank and terminate. 99

1. What equipment and services does your company offer? (CHECK ALL THAT APPLY)
   Pump Sales.....1
   Pump Servicing & Repair.....2
   Pump Installation 3
   Pump Testing 4
   Irrigation System Design 5
   Irrigation System Installation 6
   Well Drilling 7
   Service to Municipalities 8

Electrical services 9
Lab Analysis 10
Irrigation Scheduling 11
Irrigation System Evaluation 12
Other SPECIFY:_____ 77
Don't know (**DO NOT READ**).....88
Refused (**DO NOT READ**) 99

2. Would you consider your company a large, medium, or small company compared to others in your area?
   Small 1
   Medium 2
   Large 3
   Don't know (**DO NOT READ**).....88
   Refused (**DO NOT READ**) 99

3. How long have you been in business at this location?
   1 to 3 years 1
   4 to 10 years 2
   More than 10 years.....3
   Don't know (**DO NOT READ**).....88
   Refused (**DO NOT READ**) 99

If Q1=4 ask 4-15, if not skip to Q16

4. What are the primary reasons that you perform pump tests?

   Pump won't meet water demand.....1
   Routine pump performance check 2
   Customer seeing signs of performance drop, but pump still meeting demand.....3
   Part of EE or water reduction program participation.....4
   Other (Specify_____).....77
   Don't Know (DON'T READ) 88
   Refused (DON'T READ) 99

5. Who decides when a pump test occurs (i.e., does the customer request it, do you offer it)?

   Discussion:
   Don't Know (DON'T READ) 88
   Refused (DON'T READ) 99

6. Approximately how many pump tests did you perform in 2004?

   Number _____

   Don't Know (DON'T READ) .....88 [GO TO Q]
   Refused (DON'T READ) .....99 [GO TO Q]

7. Can you break down the tests into groups such as centrifugal or deep well turbine and by HP bins? (If not, what is the typical HP of the pumps you test?)

8. Is there variation from year to year in the number of pump tests you perform? If so, what is it and what is it based on?

   Yes (Specify_____) 1
   No.....2 [GO TO 21]
   Don't Know (DON'T READ) .....88 [GO TO 21]
   Refused (DON'T READ) .....99 [GO TO 21]

9. How do you provide the pump test results information to your customers?

   Standard Form with values filled in, mailed to customer 1
   Custom Report for each customer, mailed to customer.....2
   Standard Form with values filled in, delivered and explained to customer.....3
   Custom Report for each customer, delivered and explained to customer.....4
   Verbally.....5
   Other (Specify_____).....77
   Don't Know (DON'T READ) 88
   Refused (DON'T READ) 99

   (Follow on to answers: Can they fax me a sample of the paperwork? Do they discuss the results with the farmer or simply send them the paperwork?)

10. How do you use the pump test to determine if a pump repair is needed (i.e., do you have a cut off point for the OPE)?

11. Approximately what percentage of the pump tests indicate that a repair is needed?

    Percentage _____

    Don't Know (DON'T READ) .....88 [GO TO Q13]
    Refused (DON'T READ) .....99 [GO TO Q13]

12. Of the tests that indicate the need for a pump repair, what percentage of the customers opt to have that repair done?

    Percentage _____

    Don't Know (DON'T READ) 88
    Refused (DON'T READ) 99

13. What are the primary reasons that customer give for not repairing a pump that tests indicate needs repair?

    Lack of funds 1

Pump needed until end of growing season 2
Uncertainty about benefits 3
Customer always waits until pump fails to meet demand.....4
Other (Specify_____).....77
Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

14. Of those tests that result in a repair, what percentage are retested after the repair?

Percentage _____ (IF zero percent, skip next question.)

Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

15. In general what are the reasons for the post repair pump test?

Customer interest 1
Dealer checking repair 2
Dealer wishes to demonstrate effect to customer 3
Required by outside party 4
Something else (Specify_____) 77
Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

If Q1=2 ask 16-20, otherwise skip to Q21

16. Approximately how many pump repairs did you perform in 2004?

Number _____

Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

17. Can you break down the repairs into groups such as centrifugal or deep well turbine and by HP bins? (If not, what is the typical HP of the pumps you repair?)

18. Is there variation from year to year in the number of pump repairs you perform? If so, what is it and why?

Yes (Specify_____) 1
No.....2
Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

19. How often do you repair pumps without a pump test first? (All the time, Very Often, Rarely, Never)

20. Who decides when a pump repair occurs (i.e., does the customer request it, do you offer it) and what information is that decision usually based on?

Discussion:

Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

21. Does your dealership currently sell replacement nozzles to customers?

Yes 1
No.....2 [GO TO Q25]
Don't Know (DON'T READ) .....88 [GO TO Q25]
Refused (DON'T READ) .....99 [GO TO Q25]

22. Approximately how many conventional and flow control nozzles did you sell in 2004?

Number conventional_____

Number flow control _____

Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

23. Is there variation from year to year in the number of nozzles you sell? If so, what is it and why?

Yes (Specify_____) 1
No.....2
Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

24. What percent of the replacement nozzles that you may possibly sell next year do you think would be flow control?

25. Are you aware of federal grants to growers that have been offered (i.e., EQIP grants)?

Yes 1
No.....2 [GO TO Q27]
Don't Know (DON'T READ) .....88 [GO TO Q27]
Refused (DON'T READ) .....99 [GO TO Q27]

26. How are these funds are currently being used by growers (i.e., what are they purchasing with the grant money)?

Discussion:
Don't Know (DON'T READ) 88
Refused (DON'T READ) 99

27. How do your customers make their decisions on hardware improvements in their irrigation system? What type of information do they use and where do they get that information?

28. What are the most important factors that guide your customers' purchase decisions and choices?

29. On a scale of one to five, with 1 being very unimportant and 5 being very important, how important do you think energy efficiency is to your customers when they purchase irrigation system components?

30. How about water conservation, how important is water conservation to your customers when they purchase irrigation system components?

31. Do you have customers for whom energy efficiency is not at all important?

    Yes (Why do you think that is?_____) 1
    No.....2
    Don't Know (DON'T READ) 88
    Refused (DON'T READ) 99

32. Would you please describe any pump related energy efficiency efforts that you currently offer that we have not yet discussed?

33. There is an electric rate increase scheduled to take place in April of 2006. Are you aware of this rate increase?

    Yes 1
    No.....2 [GO TO Q36]
    Don't Know (DON'T READ) .....88 [GO TO Q36]
    Refused (DON'T READ) .....99 [GO TO Q36]

34. Do you have any sense of how your customers are planning to handle it? (i.e., are they attempting to become more energy efficient now?)

35. Is your company making any <u>special</u> efforts to work with your customers on this issue over the next year (i.e., outside of normal marketing)?

36. What do you see as the trends in irrigation over the next two years in the Klamath Basin? What is driving that trend? Do you think this would be different over a five year period? If so, how?

37. We are trying to identify influential farmers in your area, those farmers to whom other growers look to for trends or ways of doing business. Knowing who these folks are could help create a successful program. If they don't participate on their own, it is possible that the program may choose to target market to them. Do you feel comfortable giving us the names of such farmers?

    Specify_____ 77
    Don't Know (DON'T READ) 88
    Refused (DON'T READ) 99

Thank you very much for your time. I will be calling back to interview you toward the end of the program (in 2007) to see if there are any changes.

C. APPENDIX C – MARCH 2006 MEMO REGARDING NOZZLE VENDOR FEEDBACK

March 27, 2006

MEMO

To: Phil Degens and Spencer Moersfelder, Energy Trust of Oregon
From: Mary Sutter, Equipoise Consulting Inc.

Re: Survey of Nozzle Exchange Vendors

The Energy Trust of Oregon (ETO) and Pacific Power were interested in obtaining feedback from the nozzle exchange vendors early in the program. A short survey was performed to provide a quality assurance role, determine satisfaction with the program to date, as well as obtain feedback from the vendors.

Surveys for all five nozzle exchange vendors were completed between March 20, 2006 and March 24, 2006. The survey instrument is provided in Attachment 1. The surveys averaged seven minutes and ranged from three to ten minutes in length.

Nozzles Exchanged and Paperwork At the time of the survey, only one dealer had exchanged any nozzles (about 1,000). Four of the five had no idea of how many nozzles they may exchange in the next three months. One estimated maybe 500 nozzles (enough to fill 10 wheel lines). When questioned about the paperwork required by the program to be filled out when a nozzle exchange occurred, two had not received any paperwork, two thought it was fine, and one was extremely dissatisfied with it. However, the level of dissatisfaction must be qualified with the fact that while the vendor understood the need for the paperwork, he disliked any paperwork at all. Of the two who had not received any paperwork, one was newly added to the program (Scott River) and the other was a satellite of the main company (Alsco in Tule Lake). Only one vendor commented on the information being requested in the paperwork – with the response that it was fine.

Marketing Four of the five vendors had seen or heard the marketing of the program (two had heard the radio and three had seen printed material). While they generally felt that the marketing was effective, there was a tendency to qualify their ratings with a statement similar to "*I don't know how my customers are learning about the program, so can't really rate the effectiveness of the marketing program*". They did feel that the marketing material had the needed information, although one vendor indicated that including the information for a local vendor in the marketing may increase their calls. Two of the four with an opinion on the marketing felt that the marketing material has not provoked an interest in the program since no customers have yet taken advantage of the program. The one vendor who has actually exchanged nozzles did not know why his customers were participating, so had no opinion on the subject. One vendor, while they had not exchanged nozzles yet, felt that the marketing has interested his customers. One

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recommendation put forward to improve the marketing was to use a direct mailer (which the program is doing, although the vendor was unaware of this effort). Only two of the vendors actively market the program with their customers and neither of these have exchanged nozzles yet.

Interactions with the PMC Four of the five vendors have had interactions with the PMC (Alsco in Tule Lake has not worked with the PMC at all). They unanimously provided a high satisfaction rating (4 or 5) with their interactions. One indicated that the PMC calls all the time and keeps the vendor in the loop. The amount of time for the PMC to return calls and their level of satisfaction with that time varied by vendor. One indicated that it did not take the PMC long to return calls – about a day. Two stated that the PMC "was very quick about it" and called back "right away". The last stated that it was taking a couple days to obtain a response and that he was unsatisfied with that amount of time. This vendor would like a call back within 5 minutes to consider responsiveness to be excellent, but would settle for a same day response. All felt that the PMC was willing and able to fulfill the vendors requests once they did obtain a response.

Understanding of the Program Four vendors indicated that they felt they understood the program while one indicated that they had no involvement with the Irrigation Initiative or the nozzle exchange program (again, Alsco in Tule Lake). Two of the five did not provide a satisfaction rating of the nozzle program to date because they had had no exchanges. The other three indicated ratings of a two or three, a three, and a four (where five is highly satisfied). When a follow-up line of questions were asked about their dissatisfaction, one indicated that he did not feel that the program will save energy and the other that the program was less than what his customers wanted. When queried about why customers may not be taking advantage of the program, one vendor indicated that the field were still soggy and another indicated that his customers were participating in other programs (e.g., EQIP run by the NRCS). This same vendor indicated that the presence of EQIP, with the large funding that provides the growers with the ability to obtain new wheel lines, new pumps, and new sprinklers (i.e., the whole system, not just nozzles), was reducing the need for the nozzle exchange program, but encouraged the continuation of the program. He felt that the reduction in EQIP funds two years or so in the future may improve the participation in the nozzle exchange program.

Two items of special interest came out of the interviews. The responses from two different vendors are paraphrased below.

- *The point of the program is to reduce energy, but there are other things that could be done that would be more likely to reduce energy use – other avenues that would be more productive. Suggest increase the efficiency of the irrigation system as a whole, not just the nozzles. Don't think will save energy from just the nozzle exchange. Need to evaluate the system as a whole and make recommendations. If all programs work together, then could work better.*[1] *NRCS has to save water, but not necessarily energy.*
- The one vendor who has exchanged nozzles stated: *Some are exchanging various sizes for a same size nozzle, so at least they are getting similar nozzle sizes now (assuming that the nozzles are all going on the same system).*

[1] This point was made by another vendor as well.

Conclusions An overall synthesis of the data collected from the surveys indicate that the vendors are generally aware of and satisfied with the program, although not promoting it strongly. Despite the marketing by the program, there has been little participation to date. This could be due to competing programs with the ability to retrofit entire systems or a belief that expected energy savings will not be seen. Of those who have participated, growers are bringing in various sized nozzles in exchange for a single size. It is unclear if this is indicative of growers simply pulling together all their odds and ends nozzles for exchange or that a wheel line truly had various sized nozzles installed, but this practice has ramifications for an estimated energy impact. I believe that the program estimated a like-for-like exchange with the savings coming from a reduction in system losses. However, if the wheel lines are moving from various sized nozzles to a single size[2], the pressure differences seen were not included in the estimated savings.

Without having seen the actual marketing materials, but based on the surveys, the program may want to consider the following:

- Clearly differentiate the Irrigation Initiative from the EQIP program by perhaps including EQIP in the marketing somehow. For example, indicate that customers can participate in both programs.
- Make it very easy for the growers to know how to reach their local vendors who are participating in the program. There may be more comfort in calling a person they know rather than a distant utility company.
- Determine if creating some sort of up-stream incentive for the vendors to market the program may enhance participation.
- Have the PMC introduce the program and work directly with Alsco in Tule Lake.

Additionally, the program may want to carefully review the information on the ~1,000 nozzles that have been exchanged to assure that all the data is being captured and to determine if the indication of various sized nozzles being exchanged for a single size is actually occurring.

[2] This practice appears odd, but cannot be discounted entirely.

Attachment 1
Survey Instrument

Start Time and Date: _____

Introduction: We are interested in your feedback about the nozzle portion of our program while it is early in the process. This will allow us to make useful changes if needed. I have some questions about paperwork, marketing, the program, and your interactions with Power Services, the company that has been hired to implement this program for us.

1. About how many nozzles have you exchanged this year through the program?

Paperwork

2. You have been given some paperwork that the program needs. How satisfied are you with the amount of time it takes (or will take) to complete the paperwork? Please rate it from 1 to 5 with 5 being extremely satisfied and 1 being extremely dissatisfied.
3. If answer to above question is 1, 2, or 3, follow up with – how long does it take you (or how long will you expect it to take you) and what do you think is a reasonable amount of time to complete the information?
4. Do you have any comments on the information being requested in the paperwork?

Marketing

5. Are you aware of marketing/advertising the program has done? Yes/no if yes what marketing have you seen? [*The program has been marketing via the radio, in the paper, and using targeted direct mailing. In addition, the program has brochures and a website (www.irrigationinitiative.net).]*
6. How effective do you perceive the marketing to be? Again, use the same 1 to 5 scale. Attempt to obtain a rating for each ach of the types=radio, direct mail newspaper advertisements other that they have seen (1=not very effective and 5=very effective) Follow up if 1,2, or 3
7. Do you feel that the marketing materials provide the needed information to your customers to help them decide to participate in the program?
8. Has this marketing material provoked interest in the nozzle exchange at your business?
9. Do you have any recommendations for changes to these materials?
10. How do you let your customers know about the program?
11. How many nozzles do you expect to exchange in the next three months?

Interactions with Power Services

12. How satisfied are you with your interactions with Power Services?
13. Ask if previous response is a 1, 2 or 3 - what difficulties are you having?
14. How long does it typically take for Power Services to get back to you when you request information or support from them?
15. Once you get a response from Power Services, do you feel that they are willing and able to fulfill your request?

Understanding of Program

16. How satisfied are you with the nozzle program to date?
17. Ask if previous response is a 1, 2 or 3 – why are you unsatisfied and what suggestions do you have ?
18. Do you feel you have a full understanding of the program? If not, what part is unclear to you?
19. Have your customers been taking advantage of the program? If not, why not. If so, is it at the level you expected?
20. Do you have any other comments or suggestions that I can pass on to the Energy Trust and Pacific Power regarding this program?

Complete Time: _____
Thanks for your time.

D. APPENDIX D – DATA COLLECTION INSTRUMENTS

Energy Trust of Oregon
Irrigation Initiative Program Evaluation
Survey for Program Manager

PROGRAM MANAGER:

1. What is your role as program manager?

2. About how much of your time is devoted to this program?

3. Can you briefly describe how the program was implemented?

4. I have seen the Program Management Services Agreement, Amendment #1 (the contract with the PMC). It reduces the PMC's payment from an original contract amount of $169,300 to $134,864. How was the scope of work changed from the initial contract?

5. It also anticipates that changes may need to be made in program implementation. Was the program implemented any differently than described in that document?

    a. Why were these changes (both Q4 & Q5) made?

    b. In retrospect, did these changes impact the program accomplishments?

6. Why did ETO partner with PacifiCorp?

7. What collaboration occurred between ETO and PacifiCorp?

    a. Did PacifiCorp have any interactions with the PMC?

    b. How satisfied were you with the collaboration? Why do you say that?

    c. What were the strengths and weaknesses of your relationship? How could the collaboration be made more effective?

8. I understand the program encountered contracting difficulties. Can you briefly explain what they were, why they arose, and any lessons learned?

9. What's your understanding of how the program was marketed and the success of each approach in creating customer interest?

10. What did the PMC do to collaborate or coordinate with other organizations and regional entities involved in energy efficiency (NRCS, ODOE, Irrigation Districts, Extension Offices)?

11. Program goals were: 65,000 nozzles in Oregon, 1,164 pump tests, 36 pump test plus adjustments, 240 pump repair/replacements, 240 pump retests. Were these goals met?

a. [If N] Why do you think fewer irrigators than expected were attracted to the program? (probe: EQIP, rate increase, program design, program implementation)

b. [Probe to explore any hypotheses as to different uptake of the different program components]

12. How were the performance goals set? (role of Energy Trust, PacifiCorp)

13. Do you feel as if the PMC understood what was required and needed by the program? How effective was the communication of program goals, objectives, and requirements from the Energy Trust and PacifiCorp to the PMC?

    a. How about communication of goals, objectives, and requirements from the PMC down through to its subcontractor (the Conservation Districts) and to the vendors?

    b. How about communication of goals, objectives, and requirements to the customer? Was the communication effective? Do you think they understood the program?

14. Did the documentation of program activities go as planned per the contract with the PMC? (database, paper documents, incentive payment requests, status reports)

    a. Were the documentation activities satisfactory for you as a program manager trying to keep abreast of activities and understand market response?

    b. Any lessons learned on how it could have been improved?

15. How satisfied were you with other aspects of communication and coordination between you and the PMC, such as timeliness, responsiveness to requests, completeness of communication? Why do you say that?

    a. What were the strengths and weaknesses of your relationship?

16. Did the PMC conduct any random site inspections to verify installation for quality control? [If Y] Any interesting findings?

17. What quality assurance (QA) activities did the Energy Trust have?

    a. What were the outcomes of these QA activities?

18. Did the program yield any referrals to Production Efficiency?

19. What do you think worked best about the program?

20. What were the program challenges and least successful elements?

21. What would you do differently next time?

22. Any final comments?

Energy Trust of Oregon
Irrigation Initiative Program Evaluation
Survey for PMC

PMC:

1. What is your role as the PMC?
2. About how much FTE has been involved in this program during the growing season?
    a. Off season?
3. Were your activities affected in any way by the fact that the program was jointly offered by the Energy Trust and PacifiCorp?
    a. Did you have any interactions with PacifiCorp?
    b. How could the collaboration be made more effective?
4. Did you experience any problems in contracting for this work, or concerns about the contract? Can you briefly describe how the program was implemented?
5. I have seen the Program Management Services Agreement, Amendment #1 (your contract with the Energy Trust). It reduces Power Services payment from an original contract amount of $169,300 to $134,864. How was the scope of work changed from the initial contract?
6. It also anticipates that changes may need to be made in program implementation. Was the program implemented any differently than described in that document?
    a. Why were these changes (both Q5 & Q6) made?
    b. In retrospect, did these changes impact the program accomplishments?
7. Program goals were: 65,000 nozzles in Oregon, 1,164 pump tests, 36 pump test plus adjustments, 240 pump repair/replacements, 240 pump retests. Were these goals met?
    a. Do you know how the performance goals were set? (role of Energy Trust, PacifiCorp, Power Services)
    b. [If goals not met:] Why do you think fewer irrigators than expected were attracted to the program? (probe: EQIP, rate increase, program design, program implementation)
    c. [Probe to explore any hypotheses as to different uptake of the different program components]

8. How was the program marketed?
    a. Which approaches were most successful in creating customer interest?
    b. The least successful?
9. In what ways did you collaborate or coordinate with other organizations and regional entities involved in energy efficiency (NRCS, ODOE, Irrigation Districts, Extension Offices)?
10. Did you have any difficulties reaching agreements with pump companies for pump adjustment services?
11. Did you have any difficulties working with nozzle dealers for the nozzle exchange?
12. What assurances did you have that the Conservation District was following up with customers in need of pump repairs/replacements?
13. Of the pump tests you did, about how often was the recommendation made for repair? For replacement?
14. Did you conduct any random site inspections to verify installation for quality control?
    a. [If Y] Any interesting findings?
15. Were there any customers who applied for incentives but did not qualify because the retest results did not show sufficient savings?
    a. [If Y] How often did this occur?
    b. How did the customers react?
16. Did the program yield any referrals to Production Efficiency?
17. Did the documentation of program activities go as planned per the contract? (database, paper documents, incentive payment requests, status reports)
    a. Were the documentation requirements satisfactory from your perspective?
    b. Why or why not?
    c. What ways could the documentation requirements be improved?
18. How satisfied were you with communication between you and the Energy Trust (clear direction, timeliness, responsiveness to requests)? Why do you say that?
    a. Do you feel as if the Energy Trust understood what the issues you faced?

b. What were the strengths and weaknesses of your relationship?

19. What do you think worked best about the program?

20. What were the program challenges and least successful elements?

21. What would you do differently next time?

22. Any final comments?

Energy Trust of Oregon
Irrigation Initiative Program Evaluation
Survey for Participating Irrigators

I'm _____ calling from Research Into Action on behalf of the Energy Trust of Oregon. We are talking with growers who had free pump tests conducted by Power Services, who works for the Energy Trust and Pacific Power to deliver the Irrigation Initiative Program in the Klamath Basin.

I'd like to ask you a few questions about your experiences with the pump test; I'll need about 10 to 15 minutes of your time. Is now a good time to talk, or should we schedule a time more convenient for you?

1. I understand that you had __(#)___ pump(s) tested for free by Power Services in __(month/year)__. Is this correct? Y/N
   - Yes 1
   - No 2
   - Don't know 9

2. What type of irrigation system is served by the pumps that were tested? _____

3. Why did you decide to have your pump(s) tested? (open-ended, probe to code, check all that apply)
   - Pump won't meet water demand 1
   - Routine pump performance check 2
   - Seeing signs of performance drop, but pump still meeting demand 3
   - Wanting to reduce energy consumption 4
   - Wanting to reduce water consumption 5
   - New owner wanting to check pump performance 6
   - Other (Specify_____) 8
   - Don't Know/Refused 9

4. Which of the following were recommended based on the test results. [If more than one pump, multiple responses are okay]
   - Repair pump 1
   - Replace pump 2
   - Adjust the distance between the bowl and the impeller 3
   - New nozzles 4
   - No action needed; pump performing satisfactorily 5
   - Other (Specify_____) 8
   - Don't Know/Refused 9

5. [If adjustment recommended:] Was the adjustment done?
   - Yes 1
   - No 2
   - Don't know 9

[If recommendations for repair or replacement, ask Q7&8; else skip to Q9]

6. Did you receive a follow up call from the Conservation District about pump repair/ replacement?
   - Yes 1
   - No 2
   - Don't know 9

7. Have you taken recommended actions (for every pump)?
   - All recommendations 1

Some recommendations 2
→For how many pumps? _____
No recommendations 3

[If Took Recommendations (All/Some); else skip to "d":]

a. Did you apply for or receive an incentive for the repairs/replacements?
Yes.....1
No 2
→Why not? _____
Don't know.....9

[If Y; else skip to "b":]

i. What organization provided the incentive? Was it…
The Energy Trust, working with Pacific Power 1
The NRCS EQIP program.....2
Oregon BETC tax credits 3
(Don't read) DK 9

ii. How likely is it that you would have done the recommended repairs/replacements without the incentive? Please use a five-point scale, where 1 is not at all likely and 5 is very likely.
1 2 3 4 5

b. Have you noticed any reduction in your energy use since the repairs/ replacements?
Yes.....1
No 2
Don't know.....9

c. Consider the hypothetical situation where at the outset you knew what your experiences would be with the repairs/replacements. Would you choose to go through with the pump test and repairs/replacements?
Yes.....1
No 2
Don't know.....9

[If Did Not Take Any Recommendations]

d. Are you planning to do the recommended repairs/ replacements?
Yes—all.....1
Yes—some 2
No 3
Don't know.....9

[If planning (Yes—all or Yes—some); else skip to "iii":]

i. About when do you think you'll do them?
Before the 2007 growing season 1
After the 2007 growing season.....2
Don't know.....9

ii. Are you aware that incentives are available to offset the cost of the repairs?
Yes 1
No.....2

[If Y:]

1. How likely is it that you would do the recommended repairs without the incentive? Please use a five-point scale, where 1 is not at all likely and 5 is very likely.

1 2 3 4 5

[If not planning:]

iii. Why don't you think you'll take the recommended actions?_____

iv. Are you aware that incentives are available to offset the cost of the repairs/ replacements?

Yes 1
No 2

8. Have you had pump tests conducted in the past, prior to these conducted through the Energy Trust?

Yes 1
No 2

[If Y; if N, skip to Q9:]

a. Approximately when was that? (Probe for multiple times) _____

b. Which of the following are reasons why you've had pump tests (Read, check all that apply)

Pump won't meet water demand 1
Routine pump performance check 2
You saw signs of performance drop, but pump still meeting demand 3
You wanted to reduce energy consumption 4
You wanted to reduce water consumption 5
You recently bought the land and wanting to check pump performance 6
Or some other reason (Specify_____) 8
Don't Know/Refused 9

c. Which of the following were recommended based on the test results. [multiple responses are okay]

Repair pump 1
Replace pump 2
Adjust the distance between the bowl and the impeller 3
New nozzles 4
No action needed; pump performing satisfactorily 5
Other (Specify_____) 8
Don't Know/Refused 9

9. Have you repaired or replaced pumps in the past without first testing them?

Yes 1
No 2

[If Y, else skip to 10:]

a. About how often do you typically repair pumps? ____

b. About how often do you typically replace pumps? ___

c. How did you know when a pump needs to be repaired or replaced? (open-ended; probe to code)

Pump won't meet water demand 1
Routine pump performance check 2
Saw signs of performance drop, but pump still meeting demand 3
Wanted to reduce energy consumption 4

Wanted to reduce water consumption.....5
Recently bought the land and wanted to check pump performance.....6
Other (Specify_____) 8
Don't Know/Refused.....9

10. How did you learn that the free pump test service was available? (don't read, check all that apply; probe "anything else")

Pump dealer or other vendor.....1
Conservation district.....2
Irrigation district.....3
Water association meetings.....4
Community events.....5
County extension offices.....6
NRCS.....7
Internet.....8
Another irrigator.....9
Power Services.....10
Energy Trust.....11
Pacific Power.....12
Other (Specify_____).....13
Don't Know/Refused.....99

11. Please use a five-point scale, where 1 is not at all satisfied and 5 is very satisfied, to rate your satisfaction with the following aspects of the services you received. If one of the items I ask about didn't happen, just let me know it's "not applicable"

a. Clarity of information on value of pump test

b. Ease of contacting program staff to indicate interest in a pump test

c. Ease of completing program application forms

d. Speed with which program staff returned your calls

e. Speed with which your pump test was scheduled

f. Speed with which you received your pump test report

g. Expertise of program staff in conducting pump test

h. Clarity of pump test report

i. Usefulness of pump test report

j. Usefulness of discussion with program staff during pump test or concerning the results

k. Clarity of information on incentives available from the Energy Trust

l. Clarity of information on nozzle exchange available

m. Overall satisfaction with your program experiences

12. Did you visit the program Web site?

Yes.....1
No.....2

13. Did you have a follow-up inspection as part of the program's quality control activities?

Yes 1
No 2

14. [If Y to either Web site or inspection:] Please use the same five-point scale to rate your satisfaction with:

    a. [If Y to Web site] Usefulness of information on the program Web site

    b. [If Y to inspection] The inspection process

15. Do you have any comments you'd like to offer on how the pump test or report could be made more useful to irrigators such as you? _____

16. Please use a five-point scale to indicate how likely you are to do the following, where 1 is not at all likely and 5 is very likely

    a. Request additional free pump tests

    b. Pay for a pump test to gauge the potential for energy savings

    c. Investigate opportunities other than pump testing and repair to save energy

    d. Recommend to other irrigators that they participate in the free program

    e. Recommend to other irrigators that a pump test to gauge the potential for energy savings is worth paying for

17. Have you heard of the EQIP Irrigation System Retrofit Program, which provides incentives to modify irrigation systems in order to reduce water consumption. (If no, probe: These are available from the US Department of Agriculture's Natural Resources Conservation Service (NRCS). (EQIP stands for Environmental Quality Incentives Program))

    Yes 1
    No 2

    a. [If Y] Have you applied to the program for incentives?

        Yes 1
        No 2

        [If Y]

        i. When? (probe for more than one application) _____
        ii. Can you briefly describe the project(s) you applied for? ___

        [If N]

        iii. Do you have any plans to apply?

            Yes 1
            No 2

            [If Y]

            1. What project do you plan to propose?_____

            [If N]

            2. Are you are eligible to apply, do you know?

                Yes 1
                No 2
                Don't know 9

18. Is any of your land located in California? Y/N
    a. [If Y] Have you heard of the Agricultural Pumping Efficiency Program?
        i. [If Y] Have you applied to the program for incentives? Y/N

[If Y]

1. When? (probe for more than one application) _____
2. Can you briefly describe the project(s) you applied for? _____

[If N]

3. Do you have any plans to apply? Y/N

19. Have you taken any steps to in the past two years to reduce your business's energy consumption, other than the pump test? Y/N

    [If Y]

    a. What? _____

20. There is an electric rate increase scheduled to take place XXX. Are you aware of this rate increase?

    Yes 1

    No 2

    Don't Know 9

21. What are the most important factors you consider when deciding what irrigation systems to install and system components to purchase? _____

22. When making decisions about purchasing irrigation systems and components, how important a factor is minimizing water consumption? Please use a scale of one to five, with 1 being very unimportant and 5 being very important.

23. When making decisions about purchasing irrigation systems and components, how important a factor is minimizing energy consumption? Please use a scale of one to five, with 1 being very unimportant and 5 being very important.

24. Please use a five-point scale to indicate your concern about the impact that planned electricity rate increases will affect your profitability. Let 1 indicate not at all concerned and 5 indicate highly concerned.

25. Please use a five-point scale to indicate the extent to agree that there are things you can do to use less electricity without sacrificing production. Let 1 indicate you don't agree with the statement at all and 5 indicate high agreement.

26. That's all of my questions. Do you have any final comments or suggestions you would like to offer about the pump test program? _____

Thank you very much.

Energy Trust of Oregon
Irrigation Initiative Program Evaluation
Survey for Pacific Power Program Manager

PACIFIC POWER PROGRAM MANAGER:

1. What is your role as program manager?
2. About how much of your time is devoted to this program?
3. Why did PacifiCorp partner with the Energy Trust?
4. What collaboration occurred between you and the Energy Trust?
    a. How satisfied were you with the collaboration? Why do you say that?
    b. What were the strengths and weaknesses of your relationship? How could the collaboration be made more effective?
5. How did the contracting go for this joint program? Any difficulties or lessons learned?
6. How satisfied were you with communication between you and the Energy Trust (timeliness, clarity, responsiveness to requests)? Why do you say that?
    a. Did you have any direct communication with Power Services?
    b. [If Y] How satisfied were you with this communication?
7. How were the performance goals set? (role of Energy Trust, PacifiCorp, Power Services)
8. Program goals were: XXX nozzles in California, 1,164 pump tests, 36 pump test plus adjustments, 240 pump repair/replacements, 240 pump retests. Were these goals met?
    a. [If N] Why do you think fewer irrigators than expected were attracted to the program? (probe: EQIP, rate increase, program design, program implementation)
    b. In hindsight, what's your speculation about the program up-take had the planned rate increases gone into effect?
9. Can you briefly describe how the program was implemented?
10. What changes have occurred in the program design and implementation over the course of the Initiative?
    a. Why were these changes made?

    b. In retrospect, did these changes impact the program accomplishments?

11. What's your understanding of how the program was marketed and the success of each approach in creating customer interest?

12. Were the documentation activities satisfactory for you as a program manager trying to keep abreast of activities and understand market response?

    a. Any lessons learned on how it could have been improved?

13. What do you think worked best about the program?

14. What were the program challenges and least successful elements?

15. What would you do differently next time?

16. Any final comments?

Energy Trust of Oregon
Irrigation Initiative Program Evaluation
Survey for Contracts Person

ENERGY TRUST CONTRACTS PERSON:

1. What collaboration occurred between ETO and PacifiCorp on Irrigation Initiative?

    a. How satisfied were you with the collaboration? Why do you say that?

    b. What were the strengths and weaknesses of your relationship? How could the collaboration be made more effective?

2. I understand the program encountered contracting issues. Can you briefly explain what they were, why they arose, and any lessons learned?

3. Any final comments you would like to offer on the program?

Energy Trust of Oregon
Irrigation Initiative Program Evaluation
Survey for Energy Trust Commercial Programs Manager

COMMERCIAL MANAGER:

1. Can you briefly explain how the Irrigation Initiative has evolved and rationale for any changes that occurred?

2. Why did ETO partner with PacifiCorp?

3. What collaboration occurred between ETO and PacifiCorp on the program?

    a. How satisfied were you with the collaboration? Why do you say that?

    b. What were the strengths and weaknesses of your relationship? How could the collaboration be made more effective?

4. I understand the program encountered contracting difficulties. Can you briefly explain what they were, why they arose, and any lessons learned?

5. How were the performance goals set? (role of Energy Trust, PacifiCorp)

    a. Why do you think fewer irrigators than expected were attracted to the program? (probe: EQIP, rate increase, program design, program implementation) (Program goals were: 65,000 nozzles in Oregon, 1,164 pump tests, 36 pump test plus adjustments, 240 pump repair/replacements, 240 pump retests.)

    b. [Probe to explore any hypotheses as to different uptake of the different program components]

6. Do you feel as if the PMC understood what you wanted? How effective was the communication of program goals, objectives, and requirements from the Energy Trust and PacifiCorp to the PMC?

    a. How about communication of goals, objectives, and requirements from the PMC down through to its subcontractor (the Conservation Districts) and to the vendors?

    b. How about communication of goals, objectives, and requirements to the customer? Was the communication effective? Do you think they understood the program?

    c. How satisfied were you with other aspects of communication between you and the PMC (timeliness, completeness, responsiveness to requests, documentation, reporting)? Why do you say that?

d. What were the strengths and weaknesses of the Energy Trust's relationship with the PMC?

    i. Strengths

    ii. Weaknesses

7. What's your understanding of how the program was marketed? Your understanding of the coordination and collaboration that occurred with other organizations and regional entities involved in energy efficiency (NRCS, ODOE, Irrigation Districts, Extension Offices)?

8. What do you think worked best about the program?

9. What were the program challenges and least successful elements?

10. What changes would you make to the program next time?

11. Any final comments?

Energy Trust of Oregon
Irrigation Initiative Program Evaluation
Survey for Program Planner

PROGRAM PLANNER:

1. Can you briefly explain how the Irrigation Initiative was designed and evolved and rationale for any changes that occurred?

2. Why did ETO partner with PacifiCorp?

3. How was the decision to redesign the program made ?

4. What were the factors that that led to the current design and implementation strategies?

5. How were the performance goals set? (role of Energy Trust, PacifiCorp)

    a. Why do you think fewer irrigators than expected were attracted to the program? (probe: EQIP, rate increase, program design, program implementation) (Program goals were: 65,000 nozzles in Oregon, 1,164 pump tests, 36 pump test plus adjustments, 240 pump repair/replacements, 240 pump retests.)

6. What do you think worked best about the program?

7. What were the program challenges and least successful elements?

8. What would you do differently next time?

9. Any final comments?