This work plan consists of five parts.

Part 1 contains a task by task narrative that highlights key elements of our proposed approach and suggests opportunities for assistance and guidance from our research partners. At the end of each discussion, boxed text contains requested assistance from research partners for that task.

Part 2 contains a project schedule and the deliverables tied to that schedule.

Part 3 contains a budget summary and discussion of resource allocation.

Part 4 contains a summary of requested assistance from research partners, including the Steering Committee and the Project Sponsors.

Part 5 contains additional discussion of a list of OMM-related issues raised by the “Phase 1” Statewide Energy Plan report. Through a work plan addendum, we discuss how we propose to address these issues.
1. Part 1: Work Plan Narrative

In the narrative that follows, the tasks are numbered and ordered according to the Scope of Work document that has already been incorporated into the ISER/AIDEA contract. The text from the Scope of Work describing each task is reproduced here in italics for convenience. The Scope of Work specifies Tasks A through R. We have added Tasks S, T, V, W, and Z to the list in order to produce a complete work plan.

1.1. Task A: Executive Summary

Scope of Work Statement

A clearly stated executive summary of project intent, major findings and recommendations directed toward policy makers, service providers, and rural residents. Including:

1) Clearly state assumption of study;
2) Existing and potential efficiency incentives (Section L);
3) Identification and explanatory of existing and potential disincentives for efficiency operation and maintenance;
4) Menu of best practices for utility operation and maintenance (Section L);
5) Menu of policies and actions for affordable, sustainable utility service (Section L);
6) Models for service delivery, management policy options and their implications (Section M);
7) True costs and book costs associated with the provision of electric power, water and sewer, solid waste, and bulk fuel utility services (Section).

Proposed Approach

ISER’s professional editor, Linda Leask, will lead this task. She has extensive experience writing executive summaries and will provide a set of “fresh eyes” that are unfamiliar with the report. This approach ensures that the product communicates the information to people who are exposed to the subject for the first time.

1.2. Task B: Background Info

Scope of Work Statement

Develop background information to provide context for the research, including a review of:

1) Past research and documentation of operation and maintenance challenges;
2) Existing approaches toward village utility operations and maintenance;
3) Village utility infrastructure types, capital costs, associated operation and maintenance tasks including cost of operation and cost of maintenance;
4) Select one rural village to reflect each of the following: different size, levels of utility ownership, management and system complexity. Selection of the villages will be approved by the steering committee. The villages selected under this task will also be used in village-based tasks listed below.

NOTE: The selection of the villages shall include a detailed examination of the utility systems, including electric generation and distribution, water supply, waste disposal, and bulk fuel storage and distribution. Specifically, selected villages will ensure that there are meaningful differences in system design and physical condition. (For the sake of efficient travel, villages that have all three utilities will be desirable. Using such a sample may run counter to the desire to select villages with meaningful differences. Perhaps sampling villages near each other, but with differing conditions will provide efficient use of travel.) To the extent possible, the villages should include a variety of populations (within specified limits), locations, and other demographics. The level of service being provided from each utility segment at a variety of villages will be ascertain. The villages should represent various levels of utility services being provided to residents. Some data will be supplied to the consultant, some other will be located for the consultant, and the consultant must provide the rest. RFP will list data provided and located.

**Proposed Approach**

We will pull together background information from local libraries including UAA, Alaska Resources Library Information System (ARLIS), the Alaska Energy Authority (AEA) collection, Alaska Housing Finance Corporation (AHFC) Rural Housing Division, the Alaska Rural Electric Cooperative Association (ARECA), and the Regulatory Commission of Alaska (RCA). ISER has completed significant recent research on sanitation utility operations.

Several statistical databases are maintained by state agencies. These include the Power Cost Equalization (PCE) monthly operating data and annual statistical data, which we believe is maintained by the Department of Community and Economic Development, Division of Energy (DCED/DOE), as well as the PCE generator engine inventory and annual non-fuel expense report filings which we believe is maintained by the Regulatory Commission of Alaska (RCA).

The most critical subtask within this task is the choosing of case study villages. We plan to propose 6 "primary" case study communities to the Steering Committee (SC) for review at the June 22 meeting, as well as several "alternates." Based on the Committee's comments, the final choice of case study communities will be made by ISER based on village utility and government attributes, willingness to participate, and logistical feasibility.
1.3. **Task C: Inspect and Inventory Utility Facilities**

**Scope of Work Statement**

*Inspect the utility facilities at the chosen villages.*
   1) **Inventory the existing facilities of the selected utilities and assess their current condition.** List the shortcomings of the facilities in order of importance, i.e., safety, environmental problems, the minimum to provide the required service, reliability, efficiency, and convenience. Estimate costs to reach each level, i.e., the cost to become safe, the cost to overcome danger to environment (leaky fuel tanks, etc.), the cost to reach acceptable reliability, etc.

**Proposed Approach**

Several utility facilities inventories have been conducted in the past, but we believe that some of them have suffered from inadequate time on site and inadequate attention to managerial, fiscal, and operational capacity. Therefore, we plan both initial and follow-up visits that consider the wider context of utility operations and village government in addition to physical facilities. For the initial visit, both our engineering subcontractor (Mark Foster) and one ISER researcher (either Steve Colt or Amy Wiita) will travel to the six case study villages. Only ISER staff will make the follow-up visit.

The travel budgeted for this task assumes that significant cost savings will be gained by travelling to multiple villages within regions. If these savings are not possible, then the follow-up visit will have to be eliminated.

1.4. **Task D: Fiscal, Demographic and Economic Outlook**

**Scope of Work Statement**

*In light of the Project Intent, describe the primary factors in determining the rural fiscal, demographic and economic outlook.*
   1) **Include assumptions and projections of population and economic growth and fiscal outlook on both a statewide basis and for major regions in rural Alaska;**
   2) **Outline the economic contribution of subsistence within a rural community economy and its impact on the delivery of utility services;**
   3) **Identify primary economic resources for rural Alaska;**
   4) **Identify standard village positions associated with utility infrastructure and the role those jobs play in the local and regional economies. For example local positions vs. regional positions for utility services.**
Proposed Approach

Scott Goldsmith will pull together the most recent economic projections from the ISER Man-in-the-Arctic Program (MAP) econometric model and prepare regional projections. The econometric model incorporates fiscal detail, so that little additional work is needed to produce a fiscal outlook. We will use existing literature (eg, Alaska Department of Fish and Game (ADF&G), Division of Subsistence) and the results of our own recent Arctic Sustainability project to outline the role of subsistence within the Alaska rural economy as well as the primary economic resources available to rural Alaska. Labor rosters for utilities will be determined on a statewide basis if possible using the PCE database and the Rural Utility Business Advisor (RUBA) “RUBA Utility Management Survey” for 1999. This is a completed survey of utility management practices and finances conducted by the RUBA program. Summary results are available from Alaska Department of Community and Economic Development (DCED) – Municipal and Regional Assistance Division.

1.5. Task E: Institutional Overlays

Scope of Work Statement

Identify and describe the roles of existing institutional structures, which impact the provision of rural utility services, including:

1) Local city, tribal governments and village corporations;
2) Regional governments, non-profits, cooperatives, school districts, and utilities;
3) State and federal agencies;
4) Cooperatives and private utility companies;
5) Individually owned systems.

Proposed Approach

There is decent existing literature on this topic. To cite just one example, the recent Rural Governance Commission report contains a great deal of useful material. For those elements that have not been well covered in previous work, we will conduct interviews with key informants.

1.6. Task F: Document Outside Service Use

Scope of Work Statement

1) Document or estimate outside services used or needed, such as circuit rider maintenance personnel or technicians imported for major overhauls or major preventative maintenance;
2) Determine how such outside services are provided;
3) Independent private contractors;
4) Vendors or equipment suppliers;
5) Non-government organizations;
6) Regional health corporations;
7) Regional non-profit corporations;
8) Governmental Organizations:
   Federal
   State
   Regional
   Local

Proposed Approach

Some existing published work exists on this topic for sanitation, but for electric utilities most information will need to be gathered through telephone interviews with key informants such as staff from the DCED's Rural Utilities Business Advisory Program (RUBA), the Remote Maintenance Worker (RMW) program, and the Alaska Energy Authority circuit rider program. We will also speak with vendors, suppliers and utility managers.

1.7. Task G: Village and Regional Level Issues

Scope of Work Statement

Compare and contrast utility-related issues at the village and regional levels, including:

1) The role of the utility in the development of local and regional economies;
2) Local vs. regional cultural and social values;
3) The balance between regional utility operational efficiency and local employment issues;
4) Examine these issues and review in relation to sample villages.

Proposed Approach

This aspect of the study is a thread that runs throughout many of the other tasks. (For example, the tradeoff between possible regional utility efficiency and local employment is treated in Tasks D, I, L, and N.) We propose to weave the consideration of village and regional issues into the other study tasks and to keep track of the specific instances in which these issues emerge during the consideration of these other tasks. The salient issues will be summarized in a distinct section of the report.

1.8. Task H: Alternative Management & Operations Structures

Scope of Work Statement

1) Compare and contrast alternative management and operations structures for their strengths and weaknesses. Include:
   a) Canada;

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1 The RMW program focuses on sanitation and is coordinated by Department of Environmental Conservation (DEC) Village Safe Water Program.

2 The circuit rider program helps maintain the electric systems in 35 high-need communities.
b) Indian reservations;
c) Appalachia;
d) Cooperatives;
e) Regional/public utility districts;
f) Municipal and regional authorities;
g) National and relevant international structures;
h) Private;
i) The National Parks Service.

2) Identify the existing management and operation structures for the selected sample villages.

Proposed Approach

This task is critically important to the overall study because it is the potential source of new ideas, insights, and benchmarks against which to compare the Alaska situation. Based upon our past research and observation and the obviously similar climactic and geographic challenges, we feel that the Canadian case deserves particular attention. To that end, we have allocated resources for a field visit to Canada (Whitehorse or Yellowknife). The purpose of the visit is not to make "on-site observations," (although these may occur and would be useful) but to fully engage Canadian professionals in dialogue and in the procurement of data. In our experience a site visit is far more productive than telephone or e-mail consultation.

All other places and utility models will be analyzed using literature review and telephone work. There is a large literature on cooperatives, public utility districts, and municipal and regional water and power authorities.

The existing management and operation structures for the selected sample villages will be identified as part of Task C (Facilities inventory).

Sponsor Resources: We propose that Gillian Smythe work with USDA/Rural Utilities Service (RUS) staff to gather background materials on the current USDA/RUS role in utility finance and operation, especially through rural cooperatives, in Alaska and in other places with very small service territories.

1.9. Task I: Analysis of Existing Incentives and Disincentives

Scope of Work Statement

This analysis will include:

1) Identify existing disincentives for decreased fuel consumption and lowering O&M costs, and any other disincentives which result in inefficiency or less sustainable projects;

2) How best to increase local or regional ownership of utility systems and projects, and improve performance and lower costs for utility service;
3) Examination of possible changes in program structures (i.e. joint utilities, etc.) to encourage more feasible economics and/or increased local or regional ownership of energy projects and systems; 
4) Examination of standardized utility designs and the role of A&E firms in community selection of appropriate level of utility service; 
5) Consideration of appropriate standards of service based upon community size, administrative capacity and other factors in order to achieve the highest level of sustainable service for the community; 
6) Other potential systemic changes that could improve the economic sustainability of energy projects and/or local management capability.

Proposed Approach

Incentives drive behavior over both the short and the long run. They influence rural residents, local government officials, agency providers, and policymakers. Often they are hidden and sometimes they work at cross-purposes to one another. We regard this task as perhaps the most critical of the entire study if meaningful policy changes are to be achieved as a study outcome.

We propose to involve a wide range of scholars and practitioners in this task. For example, resources are committed to allow Dr. Matt Berman to participate in the scoping process for this analysis. Dr. Berman is a leading economic theorist who can bring a fresh perspective to help the study team develop specific hypotheses about current disincentives for efficiency and possible systemic changes to create better incentives. Likewise, we propose to prepare a synopsis of preliminary findings for the Steering Committee and to discuss this topic in some depth with the Committee during the September 14 SC meeting in order to gain the benefit of their insights into this issue.

Our approach to the task is to start with basic economic theory, which posits that individual economic agents make rational choices to maximize net benefits (i.e., to do the best they can) given the constraints and opportunities available to them. What makes the issue of incentives so important to rural Alaska utility management is the detailed consideration of the following questions:

1) Who are the relevant “economic agents”? More precisely, which people or institutions make the key decisions about what type of utility system will be built, how it will be run, how it will be paid for, and how it will be used? Some of these questions must be answered for the community as a whole, while other decisions can be made by individual households;

2) What are the actual opportunities and constraints facing these decision makers? For example, suppose that the number one priority for community leaders is immediate cash employment. These leaders might support utility projects based primarily on the number of jobs associated with initial construction;

3) How do public policies and external funding sources affect these opportunities and constraints? In a community such as Anchorage, residents decide (more or less) how they want to allocate their tax dollars among competing priorities
such as roads, schools, and parks. Rural communities may have less flexibility. For example, current funding practices provide 100% external support for capital construction of sanitation projects and zero external support for O&M. Under these circumstances it is often rational for a village to support the project with the lowest O&M cost, with little consideration of capital costs. Once the project is built, it is also rational to skimp on preventive maintenance because the more serious the breakdown, the more likely it is that the system will be repaired (or replaced) with external resources.

There is no shortage of anecdotal answers to these three questions with associated “stories” serving as evidence. Our task for this project is to synthesize this anecdotal evidence and to combine it with statistical data (where possible) and with additional evidence from interviews and observations. The goal of the analysis is to come to some valid conclusions about the nature and importance of these incentives and the extent to which they reinforce or work against broad public policy goals.

1.10. Task J: Review acceptable levels of service

Scope of Work Statement

Review acceptable levels of service for utility delivery services on a state wide basis, including:

1) The character and benefits associated with each service level;
2) Identify appropriate service levels based upon the cultural, climactic, geographic/geologic and economic conditions, as well as differences in system types and scale in rural Alaska.

Proposed Approach

The choice of an “acceptable” utility service level is partly a community decision that balances benefits against costs. However, since the total cost of utility service is often shared by other entities such as the state and federal governments, these other stakeholders have a legitimate stake in defining appropriate levels of service so that utilities are efficient, reliable, affordable, and sustainable. We propose to carry out this task by producing a clear discussion of the character, benefits, and costs of various service levels. In general, the benefits of higher service levels are similar across communities, while the costs tend to vary dramatically with climate, location, and scale. In addition, the costs of different systems are sometimes shared in very different ways among ratepayers, local residents, and the general public. For example, communities have historically been responsible for 100% of sanitation O&M costs and zero percent of capital costs.

There is a decent literature base (some of it quite recent) on this relationship as well as a substantial knowledge and experience base. We see the challenge of this task in the need to synthesize the information and present it in a way that can be meaningful to
specific communities. Otherwise, people will tend to dismiss the discussion by assuming that "our situation is different, so these ideas don't apply to us." Fortunately, there have been several community planning processes during recent years by which communities have chosen system types. (For example, ISER has evaluated the Lime Village case for electricity system selection and is now looking at the Buckland case for sanitation system selection). These case histories provide valuable stories that illuminate the perceived costs and benefits of various service levels.

1.11. Task K: Evaluation Measures

Scope of Work Statement

Identify measures for evaluating management, operation and maintenance of the levels of service including reliable, sustainable, ease of maintenance and cost efficient rural utilities

1) Consider the measures in relation to the needs of the selected sample villages from B4.

Proposed Approach

The purpose of this task is to identify appropriate and specific evaluation criteria that can be applied, in Task M, to the alternative management structures. For example, “sustainability” is a broad criterion that most people would agree is desirable, but what does it mean in practice, and how can we measure it? The Scope of Work wisely separates the identification of evaluation measures from the application of those measures. Dr. Goldsmith will lead this task in order to emphasize this separation. He will produce an initial set of proposed evaluation measures based on the broad goals of efficiency, reliability, sustainability, and cultural appropriateness. The project team will then refine these draft criteria in light of the actual case study villages being studied in detail, as specified in the scope language for this task. The proposed evaluation measures will then be shared with the Steering Committee and discussed at the September 14 meeting before being finalized. We do not expect that the Committee will formally "approve" the evaluation measures. As with the choice of sample villages, this is ultimately our job as researchers.

1.12. Task L: Analyze and Compare Management Structures

Scope of Work Statement

Analyze and Compare Management Structures

1) The project will propose a number of management structures to provide the utilities, including various levels of centralized management, contracting out some or all of the responsibilities, levels of and types of staffing. Consultant will analyze and compare the cost of each of the proposed structures. Estimate life-cycle costs of operating utilities in proposed manners, and compare them to costs of present situations;
2) Participate in the analysis and evaluation of alternative management and operational structures by considering their technical viability, effects on utility reliability, and effects on utility maintenance in the selected Alaska village settings.

Proposed Approach

As we understand it, the purpose of this task is to provide an engineering analysis and evaluation of alternative management structures. The first subtask is to provide a cost analysis of each management structure to be used as an input to the broader evaluation specified in Task M. The second subtask ensures that a qualified engineer performs a technical “reality check” on the management structures developed by the project and participates fully in the evaluation of alternative management structures. For example, proposals have been floated in the past to create feasible regional utilities by connecting village electric systems with low-cost transmission systems based on “single wire ground return” technology. This technology does not conform to prudent utility practice in the eyes of many professionals. It would (probably) be deemed technically not viable as part of this subtask, and the cost of a viable alternative would be substituted in its place.

Mr. Foster, a Registered Professional Engineer, will play a key role in the technical viability assessment and will work closely with the ISER project team to generate the cost assessments for each management structure. We expect to consult with AEA staff engineers and utility managers in developing the cost estimates.

1.13. Task M: Evaluate Alternative Structures

Scope of Work Statement

Evaluation of Management and Operation Structures

1) Examine alternative management and operations structures for rural Alaska utilities in terms of service levels and the measures defined in the evaluation measures;
2) Identify alternative operation and maintenance structures, which would be appropriate for the sample villages. More than one alternative should be identified for each village;
3) Identify and examine opportunities for standardization of parts and new utility equipment;
4) Identify minimum operational standards which could be used as a baseline requirement for funding and technical assistance.

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3 The language for Task L was initially developed as part of a discrete scope of work for an engineer subcontract to support this project. The engineering scope of work was subsequently merged into the overall project scope of work.
Proposed Approach
This task draws on and ties together several previous tasks:
• The menu of alternative OMM structures developed in Task H;
• The cost and viability analysis of Task L;
• The agreed-upon evaluation measures from Task K;
• The sample village inventories from Task C;
• The economic and fiscal outlook from Task D.

In addition, it calls for additional analysis to consider standardization of system components and the specification of minimum standards which utilities must meet as a condition for external assistance.

We propose to conduct this task over a relatively short time frame, in order to achieve maximum clarity between this evaluative task and the analytical tasks that precede it. We will begin the task immediately after the Steering Committee has reviewed the evaluation measures (Task K), and present a preliminary evaluation for discussion at the November 30 SC meeting.

1.14. Task N: Recommend Staffing Levels

Scope of Work Statement
Recommend Staffing Levels
1) Recommend an appropriate staffing level for adequate utility O&M. Consider all utilities together. Estimate electric operators per village, water system operators per village, waste system operators per village, fuel operators per village;
2) Recommend whether duties can overlap, and how time might be allocated among utilities. Recommend a level of outside resources to be applied to the maintenance of the facilities. Recommend the type of outside resources and the how those services might be provided, i.e., contractors, equipment vendors, non-government organizations.

Proposed Approach
Mr. Foster will lead this task. He has substantial experience considering staffing issues in Alaska utilities. We propose that recommendations under item 2) above, regarding outside resource provision for facilities maintenance, be included under Task R: Recommendations. This is because it is impossible to consider outside services needs and delivery methods in isolation from the overall utility incentive and management structures.

1.15. Task O: Book Costs vs. True Costs

Scope of Work Statement
Book Costs Vs. True Costs
True costs include any contributions that are presently not booked as expenses or capitalized by the utilities and charged in rates, such as grants or management/engineering aid from government agencies. The consultant will propose to the committee the components to be included in the analysis of true costs, and utilize those components agreed upon by the committee.

1) Compare and contrast book and true costs for rural utilities;
2) Compare and contrast book and true costs in sample villages.

Proposed Approach

There are two ways in which total (or "true") costs can diverge from rates. First, expenses may be accounted for on the utility books but not recovered in rates. For example, a community might use State of Alaska revenue sharing monies, sales tax receipts, or bingo revenue to make up this difference. The second way in which total costs diverge from rates is that some costs are simply left off the books. For example, the balance sheet may fail to account for grant-financed equipment as an asset or the income statement may fail to account for maintenance effort provided by an RMW as an expense. While both types of divergence between rates and total cost are important, we propose to concentrate our efforts on the second type -- the divergence between book expenses and total expenses. There is a great deal of previous research on the first type of gap (between booked expenses and rates).

The Scope of Work specifies that the Steering Committee will make the final decision about which components of cost to include as "true costs." We will prepare a proposed set of components for the Committee to consider at the September 14 SC meeting. We will revisit the analysis with the Committee at the November 30 meeting in case changes to the list of components need to be considered.

1.16. Task P: Cost Components Analysis

Scope of Work Statement

Cost Analysis for Each Utility

1) Analyze the components of the costs for each of the utilities to be studied. The study is to differentiate between Capital Costs and Operation Costs. Capital Costs are those costs associated with replacement or expansion of the system. Operation Costs are those costs associated with daily operation including labor, minor replacement parts, supplies, tools, equipment to continue operation, training, etc;

2) Provide estimates of whether the book costs as stated come close to actually covering true costs—identify the apparent deficiencies in maintenance by working with the prime contractor to reconcile what the accounting data say with what the system assessment shows. Identify the differences between the book costs and the true costs.

True costs -- Identify the life cycle costs of properly operating and maintaining existing capital equipment (prudent utility practice). Identify differences between
current state-of-the-art diesel technologies and what is in place in the study communities. Also identify emerging (but clearly feasible) new diesel-based technologies that could be deployed within 5-10 years. Similar assessments for other utilities (bulk fuel, sanitation, etc.) shall also be undertaken.

Proposed Approach

We interpret items 1) and 2) of this task to be a more detailed examination of costs for the case-study communities. In particular, this examination will use the system assessments completed under Task C in order to determine the extent to which booked actual maintenance expense does or does not cover the true cost of prudent utility maintenance practice.

The technology assessments specified under this task will necessarily be carried out at the reconnaissance level.

We hope to gain and incorporate further information on emerging diesel technology improvements from the Energy Plan Phase 2b contractor.

1.17. Task Q: Conclusions

Scope of Work Statement

1) Define opportunities for improved utility management, operation and maintenance in the context of rural communities;

2) Include a discussion of practical challenges to the implementation of those opportunities, and make recommendations for overcoming those challenges including but not limited to cultural values, engineering issues, climate, location, community size, village economies, incentive structures and any other related issues.

Proposed Approach

To be credible the study conclusions must be based on the data and analysis developed in previous tasks rather than being based on opinions, hopes, or political objectives. We will bring preliminary conclusions to the Steering Committee for discussion at the November 30 SC meeting. The study findings and the menu of possible policy options (Task R, below) will ultimately be determined by the study team and not by the Steering Committee. The Steering Committee, as well as other stakeholders, may wish to develop their own recommendations based on the study.

The following table shows how each item in the Study’s “Statement of Purpose” will be addressed by drawing upon the findings and analysis of previously completed tasks.
<table>
<thead>
<tr>
<th>Statement of Purpose Item</th>
<th>Conclusions to be based primarily on work from the following tasks:</th>
</tr>
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<tbody>
<tr>
<td>A. Provide a clear understanding of total life cycle costs, including operation, maintenance and management of water, sanitation, solid waste disposal, electric power and bulk fuel storage utilities in rural Alaska.</td>
<td>C, E, F, O, P</td>
</tr>
<tr>
<td>B. Identify socially and culturally appropriate and cost efficient public policy incentives associated with rural utilities in Alaska.</td>
<td>E, G, H, I, L, M</td>
</tr>
<tr>
<td>C. Examine and develop management, operation and maintenance approaches for core utility services (i.e. electric power, water and sewer, solid waste, and bulk fuel). Identify and define existing management structures that promote the development, maintenance and operation of socially appropriate, reliable, sustainable, and cost efficient rural utilities.</td>
<td>B, C, E, G, H, L, M</td>
</tr>
<tr>
<td>D. Define policy options, improved ordinances, and best practices designed to help improve utility management, operations, maintenance and efficiencies in rural Alaska villages. Present the findings in a list of policy recommendations, utility operational models and best service practices that are understandable to village residents, policy makers and service providers (for example, standardization).</td>
<td>G, H, I, L, N, O, P</td>
</tr>
<tr>
<td>E. Provide a list of service alternatives from minimum service (individual) to community based services.</td>
<td>E, G, H, J</td>
</tr>
</tbody>
</table>

1.18. Task R: Recommendations and Policy Options

Scope of Work Statement

1) Recommend specific actions and policies for improved utility management, operation and maintenance in rural Alaska based on research findings;
2) Define the roles and opportunities of local, state, and federal government agencies, as well as other institutional overlays in implementing the recommendations;
3) Address the use of standard designs and modular designs for all types of utility infrastructure, including water and solid waste systems, electric systems and bulk fuel storage systems.

Proposed Approach

We view this study as primarily a research effort. We believe it will be most useful if it provides a firm knowledge base that people can use to make sound decisions. To this
end, we propose to present a menu of policy options and best practices, with the advantages and disadvantages of each option or practice spelled out and supported by evidence from the study. The roles to be played by agencies and institutions -- Who should do what to implement each option -- will also be clearly addressed.

The Steering Committee may wish to develop a set of recommendations based on the findings of the study. These recommendations might encompass policy changes, pilot projects, further research, or other actions. Other stakeholders may also wish to develop recommendations. Our goal in this task, and in conducting the overall study, is to provide a knowledge base to support an informed decision making process.

1.19. **Task S: Steering Committee**

The Steering Committee (SC) shall be established by USDA. The **Scope of Work** asks for monthly meetings. After consultation with the Project Sponsors, we propose monthly management conversations with Project Sponsors and at least four Steering Committee meetings on Thursdays as follows:

1. Startup meeting. Thursday June 22, 9 am – noon.
   - Review detailed work plan and timetable;
   - Discuss proposed case study communities.

1A. Possible Progress meeting in mid August (Thursday August 10) – to be decided at Startup meeting.

2. Progress meeting. Thursday Sep 14. **ALL DAY, 9 am – 4 pm**

   Morning:
   - Go over Background Info (Task B) for case study communities;
   - Review the Economic/Fiscal Outlook (Task D);
   - Review the Institutional Overlays (Task E);
   - Review findings about alternative OMM structures (Task H).

   Afternoon:
   - Provide guidance on "acceptable levels of service" (Task J);
   - Review "measures for evaluation" (Task K);
   - Provide guidance on "acceptable staffing levels" (Task N);
   - Review and approve the components to be included in book and true costs (Task O).

3. Progress meeting. Thursday November 30. **ALL DAY, 9 am – 4 pm**

   Morning:
• Review findings from Task C (facilities inventories) for case study communities;
• Review draft findings on village and regional issues (Task G);
• Review draft findings on evaluation of management structures (Task M);
• Review draft findings on Staffing levels (Task N);
• Review draft findings on book vs. true costs (Tasks O, P);
• Discuss preliminary conclusions and recommendations (Tasks Q, R).


• Provide initial review of draft report. (Additional comments welcome throughout the comment period);
• Provide guidance on briefing points and strategy;
• Provide guidance on executive summary and final report formats.

As a general rule, we are assuming that Steering Committee members will act as project liaisons to their respective staff, and that they will serve as points of contact for ISER researchers seeking data and information.

We also note that the budget associated with this work plan does not include any resources for Steering Committee related travel. If the Project Sponsors wish to involve people from remote locations in Steering Committee meetings, they will have to cover the associated incremental costs.

1.20. Task T: Draft Report

The overall study strategy is to produce written summaries of work elements to share with other team members and with the Steering Committee. These summaries will be used as the basis for the draft report. We will begin assembling the components of the draft report at the start of January 2001. The draft report will be completed by Monday February 5. We will transmit the draft electronically (as a Word document or pdf file), post it on the ISER web site (in pdf format), and provide 30 bound hard copies and one clean hard copy original to AIDEA.

It is the Project Sponsors’ responsibility to distribute hard copies of the draft.

1.21. Task V: Comments and Final Report

Our approach to this task emphasizes the active collection of comments. We propose to construct a stakeholders list in consultation with the Steering Committee and to publicize the study and the opportunity for comment to this list. We will emphasize electronic communication and the availability of the study on the web. (As mentioned under Task T above, we will not physically distribute additional hard copies of the draft after providing 30 copies to AIDEA.)
We will review the draft report with the Steering Committee at the SC meeting Thursday, February 15, 2001.

1.22. Task W: Briefings

We propose four briefings. The first will be in Anchorage during the early fall (week of September 18). Legislative committees often meet informally during this time. The briefing could alternatively be made to a civic or industry group.

The final three briefings are planned during the legislative session. One is planned for Juneau, one for Anchorage, and one at a location to be determined in consultation with the Steering Committee. The budget includes travel for two Alaska day trips (Juneau or equivalent).

It is the responsibility of Project Sponsors to determine briefing audiences and specific locations.

1.23. Task Z: Project Management

Resources allocated under this task include time for monthly management conversations or meetings, general project communication, and a modest amount of study team time reserved for contingencies.
2. Part 2: Project Schedule and Deliverables

This project is planned to be fully completed in 61 weeks. Week 1 is defined to be the week beginning April 17. A timeline chart on the next page shows the timing of each task. The schedule highlights with associated deliverables are:

<table>
<thead>
<tr>
<th>Week beginning:</th>
<th>Event</th>
<th>Deliverable</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 June</td>
<td>SC Meeting #1 (Thursday, June 22)</td>
<td>SC Memorandum #1 (Monday June 19)</td>
</tr>
<tr>
<td>11 September</td>
<td>SC Meeting #2 (Thursday September 14)</td>
<td>SC Memorandum #2 (Monday September 11)</td>
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<tr>
<td>18 September</td>
<td>Briefing (exact date TBA)</td>
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<tr>
<td>27 November</td>
<td>SC Meeting #3 (Thursday November 30)</td>
<td>SC Memorandum #3</td>
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<tr>
<td>5 February</td>
<td>Draft Report to SC</td>
<td>Draft Report (Monday February 5)</td>
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<tr>
<td>12 February</td>
<td>SC Meeting #4 (Thursday February 15)</td>
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</tr>
<tr>
<td>26 February -- 9 April</td>
<td>Briefings</td>
<td>Briefing Materials</td>
</tr>
<tr>
<td>11 June</td>
<td>Final Report</td>
<td>Final Report (Friday June 15)</td>
</tr>
</tbody>
</table>

The project schedule is extremely tight and is driven by the goal of having a draft report completed in time for discussion and review beginning early in the year 2001. Steering Committee meetings are scheduled at critical times in order to provide timely review and assistance, as discussed under Task S (Steering Committee). Briefings are scheduled during the legislative session. The comment period is relatively long.
### OMM Study Timeline -- REVISED 16 June 2000

#### Tasks, Task Leaders, and Timing

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<td>12-Jun-00</td>
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<td><strong>Start</strong></td>
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<td>19-Jun-00</td>
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<td>11</td>
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<tr>
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<td>4-Sep-00</td>
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<tr>
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<td><strong>Start</strong></td>
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<td>32</td>
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<td><strong>Start</strong></td>
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<tr>
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<td>27-Nov-00</td>
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<td>25-Dec-00</td>
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<td>28-May-01</td>
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<td>4-Jun-01</td>
</tr>
<tr>
<td>61</td>
<td>11-Jun-01</td>
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</tbody>
</table>
3. Part 3: Budget and Study Resources

3.1. Budget

The total budget required to carry out this work plan is $253,002. A budget summary on the following page shows the budget allocation by resource and by task.

The largest portion (21%) of the budget is allocated to the on site visits to the six case study villages (Task C). The next largest portion (about 12%) is allocated to understanding and comparing alternative OMM structures (Tasks H, L, and M). The third largest portion (10%) is allocated to the incentives analysis (Task I).
## Budget Summary by Task and Resource

<table>
<thead>
<tr>
<th>Taskname</th>
<th>Resource</th>
<th>Berman</th>
<th>Cohen</th>
<th>Colt</th>
<th>Foster</th>
<th>Goldsmith</th>
<th>Killoran</th>
<th>Leask</th>
<th>Merrill</th>
<th>other direct</th>
<th>phone</th>
<th>Travel</th>
<th>Wiita</th>
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<th>% of Total</th>
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<tr>
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<td>1,154</td>
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<td>2,077</td>
<td>5,267</td>
<td>2.7%</td>
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<td><strong>42,880</strong></td>
<td><strong>15,301</strong></td>
<td><strong>8,077</strong></td>
<td><strong>2,022</strong></td>
<td><strong>2221</strong></td>
<td><strong>1,500</strong></td>
<td><strong>1,700</strong></td>
<td><strong>16,800</strong></td>
<td><strong>48,116</strong></td>
<td><strong>195,078</strong></td>
<td><strong>1.9%</strong></td>
<td><strong>% of Total</strong></td>
</tr>
</tbody>
</table>

| Indirect                      | 163      | 622    | 17,678 | 8,175 | 5,003  | 2,641     | 661     | 726    | 491     | 556          | 5,494 | 15,734 | 57,944 | 6.4%     |            |
| Total Project                 | 662      | 2,524  | 71,738 | 51,055| 20,305 | 10,718    | 2,683   | 2,948  | 1,991   | 2,256        | 22,294| 63,850 | 253,022 | 1.9%     |            |
3.2. **Study Team Resources**

Dr. Steve Colt is the ISER Principal Investigator. He will devote 1,211 hours to the project and is ultimately responsible for the completion of all tasks according to the work plan. Dr. Scott Goldsmith of ISER will lead Task D (Economic/Fiscal Outlook) and Task K (Evaluation Measures).

Mr. Mark Foster, P.E., of Mark A. Foster and Associates, will serve as the project’s engineering team leader. He will devote approximately 270 hours to the project.

ISER Research Associate Amy Wiita will play a major role in project research. She will work essentially full time on this project (about 1,700 hours). Amy will be the task leader for Task H (alternative OMM structures) and for the preparation of the Draft Report. Research Associate Mary Killoran will coordinate Steering Committee communications and project logistics. This is a vital role in a project of this scope. Mary will devote 280 hours to the project.

Other ISER staff include Research Assistant Seth Cohen (120 hours), Editor Linda Leask (56 hours) and Graphic Artist Clemencia Merrill (88 hours).

The following table summarizes study team time allocations by task.
Summary of Resource Allocations

All allocations for people are in hours. Allocations for "other direct," "phone," and "travel" are in dollars.

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<th>Sum of Budgethours</th>
<th>Resource</th>
</tr>
</thead>
<tbody>
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<td>14</td>
</tr>
<tr>
<td>B: Background Info</td>
<td>16</td>
</tr>
<tr>
<td>C: Village Inventories</td>
<td>86</td>
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<tr>
<td>D: Econ/Fiscal Outlook</td>
<td>18</td>
</tr>
<tr>
<td>E: Institutional Overlay</td>
<td>32</td>
</tr>
<tr>
<td>F: Outside Service Use</td>
<td>56</td>
</tr>
<tr>
<td>G: Village/Regional Issues</td>
<td>36</td>
</tr>
<tr>
<td>H: Compare Alternatives</td>
<td>9</td>
</tr>
<tr>
<td>I: Incentives Analysis</td>
<td>36</td>
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<td>J: Service Levels</td>
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<td>K: Evaluation Measures</td>
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</tr>
<tr>
<td>L: Cost of Alternatives</td>
<td>36</td>
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<tr>
<td>M: Compare Alternatives</td>
<td>27</td>
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<tr>
<td>N: Staffing Levels</td>
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<tr>
<td>O: Book vs. True Cost</td>
<td>64</td>
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<tr>
<td>P: Cost Components</td>
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<tr>
<td>Q: Conclusions</td>
<td>27</td>
</tr>
<tr>
<td>R: Recommendations</td>
<td>36</td>
</tr>
<tr>
<td>S: Steering Committee</td>
<td>68</td>
</tr>
<tr>
<td>T: Draft Report</td>
<td>24</td>
</tr>
<tr>
<td>V: Comments &amp; Final Rept</td>
<td>24</td>
</tr>
<tr>
<td>W: Briefings</td>
<td>25</td>
</tr>
<tr>
<td>Z: Project Management</td>
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</tr>
<tr>
<td>Grand Total</td>
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4. **Part 4: Proposed Assistance from Research Partners**

This section summarizes in one place the proposed contributions of staff time and effort from Project Sponsors.

**General: Steering Committee Members' Role as Liaisons**

As a general rule, we are assuming that Steering Committee members will include representatives from the key agency funded and tribally-funded utility programs, including Village Safe Water (VSW), Rural Utility Business Advisor (RUBA), Remote Maintenance Worker (RMW), Environmental Protection Agency (EPA), Alaska Native Tribal Health Consortium (ANTHC). We assume that these SC members will act as project liaisons to their respective agency staff, and that they will serve as points of contact for ISER researchers seeking data and information.

**Task B: Background Info**

Sponsor Resources: As of 6/12/2000, Gillian Smythe has been tasked with collecting initial background info. from existing studies at libraries and agencies (an update of previous work performed during fall 1999.) This info should be available by 6/19/00 and will be distributed to the SC.

**Task H: Alternative OMM Structures**

Sponsor Resources: We propose that Gillian Smythe work with USDA/RUS staff to gather background materials on the current USDA/RUS role in utility finance and operation, especially through rural cooperatives, in Alaska and in other places with very small service territories.

**Task P: Cost Components Analysis**

(emerging diesel technologies assessment)

We hope to gain and incorporate further information on emerging diesel technology improvements from the Energy Plan Phase 2b contractor.

**Task S: Steering Committee**

Sponsor Resources: We propose that Gillian Smythe be tasked with taking general notes at the Steering Committee meetings and distributing them to the SC members, a task she previously performed during the planning meetings. This division of labor will allow ISER staff to focus on exchange of ideas and/or the recording of critical SC input on selected topics (such as evaluation criteria).

We also note that our budget does not include any resources for Steering Committee related travel. If the Project Sponsors wish to involve people from remote locations in Steering Committee meetings, they will have to cover the associated incremental costs.

Specific Approaches to OMM Issues Raised by the Rural Energy Plan Phase 1 Report (Issues 6-12)

Prepared 6/13/00 by S. Colt

This addendum to the ISER Efficient Utilities Project Work Plan (June 15 Revision) addresses the specific OMM issues and possible solutions laid out in the Rural Energy Plan Phase 1 Report. These items and issues were summarized in an initial draft of the Rural Energy Plan Phase 2 Scope of Work. In that scope they appeared as items 6 through 12 in a larger list of issues. The scope also suggested a plan of analysis for each item. This discussion will adopt this numbering scheme for ease of reference.

Item 6: Introduce greater efficiency incentives or change regulatory practices to reduce cost of power.

Candidate Solutions from Phase 1 Report:

- Find ways to introduce elements of competition into rural utility management and operations;
- Privatize utilities that are currently publicly owned;
- Change regulatory structures to provide greater incentives to lower costs. For example, increase PCE disallowance for generator inefficiency;
- Change regulatory practices or requirements that result in increased costs without an offsetting benefit;
- Improved scrutiny of utility costs by regulatory agency.

Suggested Analysis from the Phase 2 Draft Scope of Work

Outline and evaluate specific options to increase competition (e.g. publicize rates, unbundle services, equalize tax treatment). Consult with RCA, utilities, and others on other potential regulatory changes.

ISER Proposed Approach

We will consider increased opportunities for competition as one policy option among the menu of options to be considered. The concept of “competition” can be applied in many ways. For example, communities could continue to own physical utility assets and they could solicit “competitive” bids to operate the facilities. Currently, the RCA decides who shall hold utility certificates for regulated service territories based on “fit, willing and able” criteria. Under this regime, “competitors” are able to petition to have the certificate
transferred to them on the basis of greater fitness. Both the Alaska Legislature and the RCA have considered the question of utility competition at some length. We will review the outcomes of these extensive deliberations in this study. We will also consult with utility personnel as to what forms of “competition” they feel would be most likely to lead to real cost reduction.

**Item 7: Increase power sales to reduce unit costs (i.e., rates)**

**Candidate Solutions from Phase 1 Report:**

- Require schools to purchase their electricity from the local utility rather than self-generate;
- Identify any other opportunity to increase power sales.

**Suggested Analysis from the Phase 2 Draft Scope of Work**

Consult with schools and utilities to better define present situation, risk of losing school loads, and impact of requiring purchases from local utility. Determine whether significant opportunities exist for increasing power sales.

**ISER Proposed Approach**

We will consult with schools and utilities to better define the present situation, the circumstances surrounding the actual occurrences of self-generation by schools, and the potential for additional school self-generation, if any. Generally, if schools or other high-load customers are leaving the system it is either because they feel that they can ensure higher reliability using their own generators or because rates are poorly designed. Rational rate design is complex and highly situational and we cannot consider specific rate design problems in this study. Rather, we will, consider and analyze broad patterns of rate design problems, such as the inability or unwillingness of the local utility to offer “economy energy” rates that reflect the incremental cost of power. It is also important to recognize that promoting “increased opportunities for competition” can lead directly to reduced sales by the core utility provider, as a result of the “cream-skimming” of individual high loads.

We do not believe that simply increasing electric sales is likely to be a valid means of reducing overall energy costs. For example, the installation of electric residential hot water heaters is a highly effective means of increasing sales and reducing the average cost of electricity when the utility has significant fixed costs, but this is probably not an efficient solution to the larger problem of providing low-cost energy to rural residents, as indicated in item 8, below.
Item 8: Improved planning and coordination

Candidate Solutions from Phase 1 Report:

- Improved inter-agency planning and coordination, including coordination with affected local utilities (e.g. inappropriate installation of electric hot water heaters in new construction);
- In designing new community infrastructure, use life-cycle cost analysis in selecting equipment that uses electricity.

Suggested Analysis from the Phase 2 Draft Scope of Work

Identify significant problems ascribed to inadequate planning, identify examples and describe planning measures that could reduce or avoid these problems.

ISER Proposed Approach

Apparently-poor planning is often the result of poorly structured incentives, rationally applied. (For example, some utilities diligently promote hot water heating to increase sales and reduce average rates, even though it means higher energy bills for many customers. Or, agencies tasked with providing the maximum number of square feet of new housing reduce the unit cost of construction by installing inefficient furnaces and electric hot water heaters.) Therefore, we will be considering poor planning as a long-term consequence of poor incentives, under the incentives analysis (Task I).

In other instances, the problem of inadequate planning and coordination leads directly to consideration of the “plan-design-build” component of utility management. This seems to fall outside the existing scope of work for this study, which is oriented toward maintenance, management, and operation. We, therefore, propose to identify and document significant problems ascribed to inadequate planning as part of our case study efforts and our consultations with utility management. We also propose to investigate and incorporate into our analysis any perceived widespread planning-related problems that directly relate to inefficient utility operations and management, if and when these problems are suggested to us by Steering Committee members or others. We do not propose to conduct a systematic search for planning and coordination deficiencies that relate to utility operations. We also do not expect to propose solutions to inadequate planning, other than to present evidence showing that the benefits of increased attention to planning would significantly exceed the costs.

Item 9: Improved administrative practices to reduce costs and improve O&M

Candidate Solutions from Phase 1 Report:

- Automated meter reading;
- Prepaid metering;
• Central billing;
• Separate accounting for municipal electric systems from other municipal accounts;
• Standard accounting practices.

Suggested Analysis from the Phase 2 Draft Scope of Work

Based primarily on information from field work, determine the extent of accounting problems, use of electric utility revenues for municipal operations and expected net savings and benefits from metering and billing proposals.

ISER Proposed Approach

Based on our case study field visits and on our conversations with utility managers and staff, we will consider and quantify the extent of significant accounting problems, cross subsidization of municipal services from electric revenues, and the expected net savings from automatic metering and centralized billing proposals. These latter measures fall under the umbrella of “best practices,” the identification of which is a central theme of this entire study.

Item 10: Consolidate utilities or otherwise coordinate operations to reduce costs, improve O&M, and improve reliability

Candidate Solutions from Phase 1 Report:

• Consolidate ownership and operation of single-village electric utilities into regional utilities to spread fixed costs over more sales, share resources among utilities, and increase purchasing power;
• Consolidate ownership and operation of electric utilities with other utilities (e.g. water and wastewater) on a regional basis;
• Standardize parts, equipment, and operations across utilities to reduce needed inventories and labor through inter-utility sharing of inventories and expertise.

Suggested Analysis from the Phase 2 Draft Scope of Work

Based on prior studies, prior efforts to consolidate, and field work, determine likely impact of consolidation in terms of cost, rates, and reliability. Discuss obstacles. Define possible degrees of consolidation and associated net benefits (e.g. cooperation on parts, equipment, personnel). Focus on specific communities with highest potential.

ISER Proposed Approach

The consideration of regional utilities and consolidated utilities is included in the existing work plan as a key study component. These dimensions of management structure (regionalization, consolidation, and combinations of the two) will be carefully considered as part of Tasks H, L, and M.
Standardization is also included in the work plan as a key component of Task M.

**Item 11: Establish standards and incentives for improved OM&M and reliability**

**Candidate Solutions from Phase 1 Report:**

- Create a statewide agency or organization that will establish standards for rural electric utilities with respect to financial management, physical plant, and system maintenance and operations;
- Establish mechanism to determine if operation and maintenance is being performed as required;
- Encourage or require single-village utilities that do not meet OM&M standards to join a multi-village utility;
- Encourage or require single-village utilities that do not meet OM&M standards to contract with a capable firm or organization for long-term maintenance and management services;
- Require that receipt of capital project grants be tied to an enforceable commitment to standard maintenance of all plant and equipment;
- Eliminate direct subsidies for replacing equipment that fails due to poor maintenance;
- Through RCA regulation, provide profit margin incentives for improved operations and/or reliability.

**Suggested Analysis from the Phase 2 Draft Scope of Work**

Estimate cost to establish, monitor, and enforce O&M standards. Estimate impact on O&M cost, total utility cost, and reliability. Project impact and obstacles to tying capital project grants to O&M commitments. Define how profit margin incentives could work and project impact of proposals.

**ISER Proposed Approach**

Statewide utility management organizations, minimum standards, regionalization, and outsourcing are all existing study items listed in Tasks H, L, M, Q, and R.

The tying of capital project monies to “enforceable commitments” and to “standard maintenance” is an obvious potential policy lever by which to implement improved maintenance standards, given that “standard maintenance” is well-defined and that a mechanism exists for making “enforceable commitments.” From our research into sanitation issues, we have good evidence that these problems of definition, monitoring, precommitment, and enforceability are extremely difficult to solve. We will, however, consider this policy option as well as the suggestion that direct subsidies for replacement be eliminated when the equipment fails due to poor maintenance.
We understand the term “profit margin incentives” to mean the use of price-based ratemaking rather than cost-based ratemaking. Both RCA and the PCE program could incorporate “shared savings” approaches to reward utilities for cost reductions; certainly the current structure of the PCE program removes much of the financial incentive for a utility to lower its costs. We will consider these incentive issues in detail as part of Task 1.

Item 12: Expand State funding and programs to improve OM&M.

Candidate Solutions from Phase 1 Report:

• Include prepayment of long-term maintenance costs with capital project grants.
• Expand the State’s circuit rider program;
• Increase operator training;
• Develop methods to reduce operator turnover.

Suggested Analysis from the Phase 2 Draft Scope of Work

Describe recent level of effort (circuit rider and training), impact of current effort, and potential cost and benefit of expansion. Define and evaluate option for prepayment of O&M from capital project grants.

ISER Proposed Approach

We propose to describe recent and current levels of state O&M assistance through circuit rider and training programs (as well as the RMW and RUBA programs for sanitation). The potential costs and benefits of expanding these programs will be considered within the context of the broader menu of alternative management structures. For example, the circuit rider concept may be technically valid but best applied by the utilities themselves and not the state, or circuit riders might be a natural component of a regional utility organization. We will consider the provision of O&M support through endowments and prepayments as a key item on the menu of policy options for promoting efficient utility operation and maintenance.