

This document is a Request for Proposal for a Distributed Energy Study investigating the operating impacts and values of distributed solar energy technologies for the APS electrical system. A full description of this study is in Attachment 2.

APS will use a best-value procurement process that considers additional factors besides price. The major components of this process will be addressed in the sections below.

Important Dates

| | |
|-------------------------|--------------------------------|
| Bidder's teleconference | February 15, 2008, 10:00am MST |
| Proposals Due | February 29, 2008, 1:00pm MST |
| Selection | March 7, 2008 |
| Final Report Submitted | January 12, 2009 |

Bidders Conference

A bidder's conference will be held to discuss the selection process and project requirements. The meeting will be a teleconference only. Dial in and contact information is below. RSVP before the meeting to receive copies of presentations for the call.

Time: 10:00 am (MST)
Conference call: 800-374-2441
Conference code: 6022504954
RSVP: scott.canada@aps.com

Proposal Contents

Below is a description of the contents for the proposal to APS.

1. Study Description & Results
2. Study Plan
3. Qualifications and References
4. Risk Assessment Plan
5. Detailed discussion of split in work by the Consultant and APS.

Study Description & Results – The consultant will provide a description of the study and the expected results. This description will include a list of the major factors affecting the analysis and producing the deliverable as well as a discussion of the distributed energy values identified in the study description provided in Attachment 2. This document should be 4 pages or less.

Study Plan – A project plan describing major tasks and the consultants plan for completing this study. Included with this plan should be a detailed schedule for completion. This plan should be 4 pages or less.

Qualifications and References - Please include the following:

1. Primary project team organization and related experience. Total of 2 pages plus resumes of team members.

2. Description of three projects where the consultant and specifically project team has done similar studies. 1 page or less per project.
3. References for each of the above projects. Included in the project description.

Risk-Assessment Plan (RAP) - All bidders must submit a Risk-Assessment Plan. The RAP must not be longer than 2 pages. The RAP should address the following items in clear language:

1. Identify project risks that the consultant does **not** control. Risk of concern are those which cause the consultant to not finish on time, exceed budget, produce change orders, or be a source of dissatisfaction for APS.
2. Explanation of how the consultant will avoid or minimized these risks they do **not** control.
3. Provide a project schedule documenting general milestones. See Attachment 3 for APS milestone deliverables.
4. Propose any options that could increase the value of the study.
5. Explain the benefits of the proposed options. Address the quality and performance differences in terms of risk minimization so the owner can understand the benefits.

Work Breakout Summary - Discuss the expected breakout of work for each of the five tasks. In this discussion, include the following.

1. Role of Consultant and APS project team for the items identified in the project plan. Provide a summary of level of support expected from APS to meet task goals.
2. Description with dates for information and data needed from APS for the consultant to complete.

Collaboration

APS strongly encourages consultants to propose approaches which collaborate with national labs, outside industry expertise and universities with knowledge of the Southwest US.

Proposal Submittal

In addition to the above information, each Consultant shall submit a Proposal Form for the project (Appendix 1).

Proposals should be submitted electronically in Adobe .pdf format via email to scott.canada@aps.com . Email must be submitted prior to submittal deadline and verification should be made by bidder that the electronic copy was received by calling Scott Canada at 602-250-4954. The Proposal Form (Appendix 1) should be filled out completely, signed and scanned to be submitted as part of the electronic submittal .pdf.

Contact APS in advance for extra large files to obtain alternative submittal process through the APS FTP site.

Please provide (1) hardcopy by mail immediately following electronic submittal for APS verification.

Late proposals will not be reviewed or considered.

Method of Award

The proposal process has been designed to provide the information needed to select the best-valued consultant. The selection model will analyze: project deliverable, qualifications and references, experience with similar projects and technologies, the Risk-Assessment Plan, cost proposal and other project requirements.

Post Award Meeting / Deliverable Schedule

Upon notice of selection, a kick-off meeting will be held with APS and the consultant to answer any technical and/or performance concerns. The completion date for the final study is January 12, 2009. This date is defined by a regulatory filing required by the Arizona Corporation Commission. Two submittal dates for draft studies have been identified to assure that all reviews are completed and final comments are incorporated to meet this date. The consultant agrees that they will complete the job on time, within budget, and with no consultant-initiated cost change orders.

Damages

Because of the regulatory deadlines involved with this project. APS will include liquidated damages for schedule delays with delivering the draft report and the final document. The damages will be a daily damage paid to APS as a reduction in payment due at final invoicing. Below is the damages schedule.

- \$500 per day for daily delays beyond December 22, 2008 in submitting the Final Draft to APS.
- \$1,000 per day for daily delays beyond January 12, 2009 in submitting the Final Report to APS.

Invoicing

Invoicing will be based on the interim and final deliverables. The consultant needs to propose the billing amounts based on the milestone events identified in the Attachment 3. Final invoicing deliverable billing may be adjusted at time of award.

Attachment 1

Proposal Summary Form

The consultant agrees to perform all work as specified in the following documents:

1. The Request For Proposal (along with any addendum).
2. The Consultants Bid Proposal.
3. The Consultants Risk Assessment Plan.
4. Work Breakout Summary

The consultant agrees to perform all work mentioned (in the above mentioned documents) at the price and the duration submitted in their bid proposal. The line item bid cost for the study is below:

Project facilitation and process development: (Task 1-5)

\$ _____

APS understands that additional engineering support may be required for Task 3 analysis. Please provide an hourly rate for engineering support of APS Distribution Value Analysis if required.

\$ _____

The total project submitted in the bid proposal is:

Days (Calendar) _____

The consultant team (name and title/role):

Project Manager: _____

Support staff: _____

Support staff: _____

Support staff: _____

This bid package includes:

- Study Description
- Study Plan
- Risk Assessment Plan
- Work Breakout Summary

The Consultant accepts full responsibility for delivering this project as intended by APS (delivering on-time, within budget, and meeting the quality requirements). APS will not accept any change orders except for changes in scope or unforeseen events (as determined by the owner).

Consultant Name:

Date:

Name of Agent / Owner:

Signature of Agent / Owner:

Attachment 2 – Study Description

APS Distributed Renewable Energy Operating Impacts and Valuation Study

Summary

Arizona Public Service (APS) is initiating a study to determine the operating impacts and values of distributed solar energy technologies for its electrical system. While numerous studies have looked at the value of distributed energy, none have been performed to date for the APS specific conditions. In addition, APS would like to develop processes that can be used for evaluating the costs and benefits to APS of distributed energy technologies. Much of the focus will be placed on assessing the value distributed solar technology generation provides as well as investigating the system impacts. Realistic distributed energy deployment and production scenarios will be employed to evaluate these impacts and the location and amounts of distributed energy will also be determined for existing and future distributed energy. The technologies that will be considered as part of this effort are:

- Photovoltaic (PV) Systems – Commercial and Residential
- Residential Solar Hot Water
- Solar Day Lighting

The deliverable will be a published report detailing the findings of the system and financial impact of these technologies. APS estimates that this project will take approximately nine months to complete. To gain alignment across APS, the project will actively engage key internal groups such as resource planning, energy delivery, and transmission planning. In addition, the project will involve a group of external stakeholders to ensure that a variety of perspectives are represented and that there is transparency in the analysis.

Study Objectives

Our overall objective is to produce quality results that are broadly supported throughout APS and with external stakeholders. The major tasks for achieving this are to:

- Characterize the APS power system operation and planning, including detailed description of the aspects relevant to distributed generation technologies.
- Define realistic distributed generation deployment scenarios and projected production data for use in the analysis.
- Evaluate the value provided by distributed technologies in terms of capacity and energy.
- Evaluate the impacts on system operation, reliability and value provided by distributed generation on the APS system.
- Identify areas of potential value improvements for both the distributed energy owner and the utility.
- Provide guidance to APS department, customers and renewable energy stakeholders for achieving the values discussed in the study.

Work Scope

Task 1: Characterize Typical DE Systems and Develop Deployment Frameworks

The initial task for this project will require characterizing the three solar distributed energy systems and then developing possible deployment frameworks. The consultant should characterize over the timeframe of 2010, 2015 and 2025:

- A. System size (s) (relative to customer load)
- B. Orientation
- C. Other system features (e.g. storage, dispatchability)
- D. Operation (how systems are typically run and used); how does this vary during on-peak/off peak and by season (summer, winter, shoulder)
- E. Controllability (by owner, utility)
- F. Cost

The above should be done for:

- PV systems (commercial and residential)
- Residential solar hot water
- Solar day lighting

In addition to the above, the consultant will need to define deployment frameworks for the above technologies. APS has provided three initial frameworks to help guide the analysis, all of which are assume compliance with the Renewable Energy Standard in the state.

| Deployment Frameworks | |
|-----------------------|---|
| Free market | <ul style="list-style-type: none"> • More or less business as usual; fairly random distribution of systems • Placement of DE systems is based on market, incentives and customer response • Key question: What is the market potential and can APS reach compliance? |
| Semi-strategic | <ul style="list-style-type: none"> • Free market • <i>Plus</i>, additional market development efforts intended to encourage additional installations in specific market areas (i.e. strategic RFPs) |
| Strategic | <ul style="list-style-type: none"> • Strategic placement of DE on APS grid to obtain optimal value for APS • Primarily strategic piece of semi-controlled |

Figure 1: Deployment Frameworks

Task 2 – 4 Methodology

Tasks 2 through 4 should all use the methodology illustrated in Figure 2.

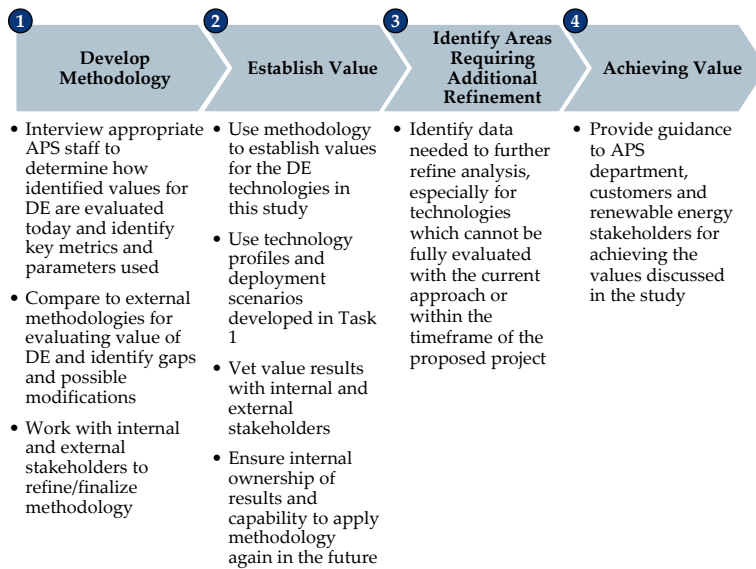


Figure 2: Methodology to be used for Tasks 2 – 4

The consultant will lead all of the work for Task 1 and rely on APS Renewable Energy Group as well as the other APS departments for input and feedback as requested. The stakeholder groups will act primarily as reviewers and to provide feedback. The consultant should build into the project time to engage APS internal and external stakeholders.

Task 2: Determine Utility Capacity and Energy Value

Task 2 will determine the utility capacity and energy value. The following table is provided as guidance. The items identified provide insight into the data and analysis APS believes will be needed to analyze the values for the task. The consultant will work on Task 2 in consultation with APS' Resource Planning representatives.

| Values | Analysis & Data Required to Evaluate Value |
|--|---|
| Central Power Generation Cost (Energy) | <ul style="list-style-type: none"> • Time differentiated avoided costs <ul style="list-style-type: none"> – APS focus (but is similar to the region) – Fuel mix on the margin (heat rate) • Adjustment for losses • Coincidence of DE with utility peak and off-peak loads (consider orientation of solar system) • Natural gas price variance, current and future (assumption is that NG is on the margin) |
| Central Power Capacity Cost | <ul style="list-style-type: none"> • Capital cost of generation or resources being offset • WECC/Regional rules for establishing capacity credits • Rules to define equivalent firm capacity value for DE (e.g. coincidence of DE with utility peak and off-peak loads) • Adjustment for losses • Adjustment factor to capture DE output degradation • Time differentiated capacity cost (identify peaks and demand diversity for APS and region, where applicable) • Ownership arrangements and impacts on firm capacity credits (e.g. utility vs. customer DE ownership/control) • Capital cost recovery factor |

Figure 3: Data and Analysis Values Required for Energy and Capacity

The results of this task will be discussed at Review Meeting #2 to be held at APS. APS expects that a draft for Task 2 will be available to present to internal and external stakeholders for comment at this time.

The consultant will be expected to lead part one of this task “Develop the Methodology”, including directing APS on adjustments to any analysis tools. APS will provide analysis for each of the technologies within each scenario to support the consultant’s lead for the task “Establish the Value”. The consultant will manage part three “Identify Areas that Require Additional Refinement” as well as part four “Achieving Value”.

Task 3: Conduct Detailed Distribution System Cost/Benefit Analysis

Task 3 will determine the distribution system costs, benefits, system losses, customer reliability, and other risks/factors for the distributed energy technologies using the methodology discussed in Figure 2. The following table is provided as guidance. The items identified provide insight into the data and analysis APS believes will be needed to analyze the values for the task. The consultant will work Task 3 in consultation with APS’ Energy Delivery representatives.

| Values | Analysis and Data Required to Evaluate Value |
|-------------------|---|
| Distribution Cost | <ul style="list-style-type: none"> • Establish rules for defining equivalent DE distribution capacity offsets (e.g. under what condition can DE be relied on to off-set or defer distribution capacity additions) • Coincidence of solar with APS system peak conditions (consideration of optimal orientation) • Select representative distribution feeders and substations for study • Unique distribution system aspects of voltage and power quality (i.e. power factor, harmonics, frequency, noise) |

| | |
|-------------------------------|---|
| | <ul style="list-style-type: none"> • Distribution planning criteria and design guidelines <ul style="list-style-type: none"> – Equipment loading criteria (normal vs. emergency) – Substation and feeder tie capability – Protection requirements – Economic evaluation methods and criteria • Distribution capacity plan <ul style="list-style-type: none"> – Proposed substation and feeder capacity expansion – Associated costs for substation and feeder additions – Real vs. reactive power on- and off-peak (i.e. power factor) – Projected load growth of region and by asset type – Substation and feeder peak (including weather adjustments) • Cost of distribution investment <ul style="list-style-type: none"> – Feeder upgrade costs and life extension value • Protection requirements <ul style="list-style-type: none"> – Feeder protection, Protection coordination , Worker safety (protection requirements) – Additional labor costs (related to upfront implementation and on-going operations and compliance monitoring) • Interconnection requirements • Climate impact on distribution system • Cost of integrating technology (e.g. extra labor costs, protection controls) |
| System Losses | <ul style="list-style-type: none"> • Typical feeder configuration <ul style="list-style-type: none"> – Typical feeder length (mainline vs. laterals) – Substation transformer load losses – Typical loss factors • Impact of DE location on line loss reduction (e.g. at end of line, evenly distributed) • Who pays losses (e.g. APS or delivery company) |
| Customer Reliability | <ul style="list-style-type: none"> • Extent DE can operate on stand-alone basis to provide reliability <ul style="list-style-type: none"> – What DE types would be eligible to operate on stand-alone basis given interconnection standards • Extent DE improves overall system reliability, therefore improving reliability and service quality to all customers |
| Risk and Other Factors | <ul style="list-style-type: none"> • Value added from diversity of generation on distribution (i.e. does DE enhance reliability or reduce risk?) • Control strategy for DE (i.e. is or can DE be under utility control? To what extent can DE be relied upon as firm capacity that could defer T&D additions with or without direct control?) • Additional cost of liability and insurance (depends on system ownership) • How APS meets regulatory obligation to serve with 3rd party DE ownership (assumption is that DE can defer additional capacity additions) <ul style="list-style-type: none"> – Contractual arrangements – Possible penalty and incentive mechanisms – Alternatives and mitigation strategy if DE is unavailable or does not operate as expected at the time of the T&D peak |

Figure 4: Data and Analysis Values Required for Distribution (continued)

The results of this task will be discussed at Review Meeting #3 to be held at APS. APS expects that a draft for Task 3 will be available to present to internal and external stakeholders for comment at this time.

For this task the distribution system is considered 69kV and lower.

The consultant will be expected to lead part one of this task “Develop the Methodology”, including directing APS on adjustments to any analysis tools. APS will provide analysis for each of the technologies within each scenario to support the consultant’s lead for the task “Establish the Value”. The consultant will manage part three “Identify Areas that Require Additional Refinement” as well as part four “Achieving Value”.

Comment [z1]: Fix

Task 4: Conduct Detailed Transmission System Cost/Benefit Analysis

Task 4 will determine the transmission costs, benefits, system losses, and other risks/factors for the distributed energy technologies using the methodology discussed above. The following table is provided as guidance. The items identified provide insight into the data and analysis APS believes will be needed to analyze the values for the task. The consultant will work on Task 4 in consultation with APS’ Transmission Planning representatives.

| Values | Analysis and Data Required to Evaluate Value |
|-------------------|---|
| Transmission Cost | <ul style="list-style-type: none"> • Establish rules for defining equivalent DE transmission capacity offsets (e.g. under what condition can DE be relied on to off-set transmission expansion or upgrades) • Transmission planning criteria and design guidelines <ul style="list-style-type: none"> – Equipment loading criteria (normal vs. contingency/emergency) – Bulk system and lower voltage sub transmission capability – Replacement criteria • Transmission capacity plan <ul style="list-style-type: none"> – Proposed bulk and sub transmission capacity expansion additions – Associated costs for bulk system and sub transmission additions • Projected load growth of region bulk system and lower voltage sub-transmission peak • Cost of transmission investments <ul style="list-style-type: none"> – Bulk system and sub-transmission line and substation upgrade – Life extension • Protection requirements <ul style="list-style-type: none"> – Worker safety; bulk system and sub transmission protection; and protection coordination • Temperature impact on transmission system • Impact of interdependency and joint ownership between APS, SRP and others |
| System Losses | <ul style="list-style-type: none"> • Bulk and sub transmission losses (derived from network load flow analyses) <ul style="list-style-type: none"> – Peak versus off-peak – Line (network versus radial) – Substation transformer load losses – Typical loss factors (network versus radial sub transmission) |

| | |
|-------------------------------|---|
| | <ul style="list-style-type: none"> • Impact of DE location on transmission loss reduction (e.g. interconnection voltage and location) <ul style="list-style-type: none"> — Coincidence factor for transmission peak versus maximum DE output interval — Impact of generation dispatch and interchange transaction on losses |
| Risk and Other Factors | <ul style="list-style-type: none"> • Value added from diversity of generation on transmission (i.e. does DE enhance reliability and/or reduce risk?) • Control strategy for DE (i.e. is or can DE be under utility control? To what extent can DE be relied upon as firm capacity that could defer T&D additions with or without direct control?) • How APS meets regulatory obligation to serve with 3rd party DE ownership and control (assumption is that DE can defer additional capacity additions) <ul style="list-style-type: none"> — Contractual arrangements — Possible penalty and incentive mechanisms — Alternatives and mitigation strategy if DE is unavailable or does not operate as expected at the time of the T&D peak |

Figure 5: Data and Analysis Values Required for Transmission Analysis

The results of this task will be discussed at Review Meeting #3 to be held at APS. APS expects that a draft for Task 4 will be available to present to internal and external stakeholders for comment at this time.

The consultant will be expected to lead part one of this task “Develop the Methodology”, including directing APS on adjustments to any analysis tools. APS will provide analysis for each of the technologies within each scenario to support the consultant’s lead for the task “Establish the Value”. The consultant will manage part three “Identify Areas that Require Additional Refinement” as well as part four “Achieving Value”.

Task 5: Conduct Remaining Cost/Benefit Analysis

Task 5 will determine the values for emission reduction, ancillary services, fuel price hedge, consumer price protection, and any other items the consultants deems important. At a minimum, the consultant will provide information on all the variables sections of the table below. In addition, the following table identifies some of the data and analysis APS believes will be needed to analyze the values for the task.

| Values | Analysis & Data Required to Evaluate Value |
|---------------------------|--|
| Emission Reduction | <ul style="list-style-type: none"> • Rules for emissions, both state and regional • Current and projected SOx credits including trading mechanisms • Assessment in terms of carbon reduction/GHG and mercury reduction |
| Ancillary Service | <ul style="list-style-type: none"> • On-line versus off-line spinning reserve requirements • Value of reactive power (vars and voltage support) [not done yet at APS– will need support on how to address] • Regulation services (how does DE impact regulation service requirements) |
| Fuel Price Hedge | <ul style="list-style-type: none"> • DE diversity (extent to which DE provides price hedge due to diversified generation) |
| Customer Price Protection | <ul style="list-style-type: none"> • Level of price stabilization expected for customers owning DE |
| Other | <ul style="list-style-type: none"> • Potential market response to technology deployment scenarios |

Figure 6: Data and Analysis Values Required for Other Costs/Benefits

The results of this task will be discussed at Review Meeting #3 to be held at APS. APS expects that a draft for Task 5 will be available to present to internal and external stakeholders for comment at this time.

The consultant will be expected to lead part one of this task “Develop the Methodology”, including directing APS on adjustments to any analysis tools. APS will provide analysis for each of the technologies within each scenario to support the consultant’s lead for the task “Establish the Value”. The consultant will manage part three “Identify Areas that Require Additional Refinement” as well as part four “Achieving Value”.

Study Guidelines

All assumptions and methods shall be clearly outlined and reviewed during the course of the study and clearly articulated in the report. Models and system data shall be coordinated with, and consistent with, existing APS models and databases. The consultant will be expected to engage three stakeholder groups throughout the process as shown in Figure 7. The internal APS teams have already been identified, and initial people have been selected to be part of the Technical Working Group which consists of experts throughout the country who have worked on similar types of issues. The Industry Working Group and the Construction Working Group, comprised more of in-state stakeholders, will also need to be finalized, but initial representatives have been contacted already on behalf of APS for this project.

| Stakeholder Group | Role in Proposed Project |
|---|---|
| Internal APS Working Group/Consultants/Local Universities | This group will include APS staff, consultants and potentially local universities. Regular monthly meetings will allow for regular progress updates, vetting of issues and development of shared assumptions. |
| Technical Working Group (s) | This group will include selected technical experts in the area of DE benefits and cost analysis. They will provide input, guidance, and review of the process and will meet quarterly, at a minimum. |
| Industry Stakeholders | This group will include industry representatives. Regular meetings, at a minimum quarterly, will provide the opportunity for industry input, guidance, and review of the project. |

Figure 7: Required Stakeholder Meetings

The internal and external stakeholder groups have already been defined, have had the opportunity to review this project study outline and have provided input to its content. These stakeholder groups have been formed to provide guidance and external review to the study team, so that the end result is a broadly supported, technically rigorous, inclusive study process. See Attachment 4 for a listing of technical advisors and stakeholder groups.

In addition, APS is considering a fourth stakeholder group to represent the new home construction industry. This is particularly important and relevant to Task 3: Distribution. The consultant should build in the potential of engaging this fourth stakeholder group.

Deliverables

Interim deliverables including value analysis and draft reports will occur throughout the project. Refer to the attached schedule for additional details. A completed final report will be required by January 12, 2009. This final submittal date is critical for meeting submittal dates requested by the Arizona Corporation Committee (ACC). As indicated in the above task descriptions, periodic update and status meetings will be needed with the awarded consultant and key stakeholder groups. In addition, the consultant will provide:

- A project kick-off meeting to be held in Phoenix
- Detailed monthly e-mail progress updates.
- Bi-weekly conference calls with key study participants.
- Four review meetings (one-half to one full day each, held in Phoenix).
- Regular stakeholder meetings. (these could be tied to review meeting dates)
- Draft and final reports covering all tasks including an executive summary for non-technical reader

Attachment 3 - Project Deliverables & Schedule

The following are three milestone deliverables APS will expect during the project. These deliverables will be used to ensure that the study is staying on schedule. In addition, the milestone findings will be used to guide the discussions with the various stakeholders and technical contributors during the stakeholder update meetings. Dates for the interim deliverables are identified on the following project schedule.

Milestone 1: Deployment Scenarios 1-3

Description: Completed description of Task 1. This will include description(s) of the various systems, quantity, annual energy production curves and expected quantity of systems in the analysis years as well as any additional information identified as needed for tasks 2,3,4,5.

Milestone 2: Value Analysis for Task 2-5 for Scenario 1

Description: A complete set of Benefit/cost analysis for Tasks 2-5 for deployment scenario 1.

Milestone 3: Complete Value Analysis for Tasks 2-5

Description: A complete set of Benefit/cost analysis for Tasks 2-5 for all deployment scenarios.

Draft Report: Final Draft Complete December 22, 2008

Final Report Submittal: January 12, 2009

Major Project Milestones and Deliverables

| ID | Task Name | Duration | Start | Finish | 1st Quarter | | | 2nd Quarter | | | 3rd Quarter | | | 4th Quarter | | | 1st Quarter | | |
|----|--|------------|--------------|--------------|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|
| | | | | | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb |
| 1 | DE Study - Consultant RFP | 37.5 days | Mon 1/21/08 | Wed 3/1/208 | | | | | | | | | | | | | | | |
| 6 | Task 1 - Develop Scenarios | 25 days | Wed 3/19/08 | Wed 4/23/08 | | | | | | | | | | | | | | | |
| 9 | Milestone Deliverable 1 - Task 1 | 0 days | Wed 4/30/08 | Wed 4/30/08 | | | | | | | | | | | | | | | |
| 10 | Tasks 2-5 | 130 days | Wed 4/16/08 | Wed 10/15/08 | | | | | | | | | | | | | | | |
| 15 | Milestone Deliverable 2 - Mid Analysis | 0 days | Mon 7/7/08 | Mon 7/7/08 | | | | | | | | | | | | | | | |
| 16 | Milestone Deliverable 3 - Complete Vi | 0 days | Wed 10/22/08 | Wed 10/22/08 | | | | | | | | | | | | | | | |
| 17 | Quarterly Meetings | 205.5 days | Wed 3/26/08 | Wed 11/7/09 | | | | | | | | | | | | | | | |
| 18 | Kick-off meeting | 1 day | Wed 3/26/08 | Thu 3/27/08 | | | | | | | | | | | | | | | |
| 19 | Stakeholder Status Update 1 | 1 day | Wed 5/7/08 | Thu 5/8/08 | | | | | | | | | | | | | | | |
| 20 | Stakeholder Status Update 2 | 1 day | Wed 7/16/08 | Wed 7/16/08 | | | | | | | | | | | | | | | |
| 21 | Stakeholder Status Update 3 | 1 day | Wed 10/29/08 | Thu 10/30/08 | | | | | | | | | | | | | | | |
| 22 | Stakeholder Status Update 4 | 1 day | Wed 1/7/09 | Wed 1/7/09 | | | | | | | | | | | | | | | |
| 23 | Draft Report | 53 days | Wed 10/8/08 | Mon 12/22/08 | | | | | | | | | | | | | | | |
| 24 | Initial Draft | 5 wks | Wed 10/8/08 | Wed 11/12/08 | | | | | | | | | | | | | | | |
| 25 | APS Review of Draft | 3 wks | Wed 11/12/08 | Wed 12/3/08 | | | | | | | | | | | | | | | |
| 26 | Final Draft | 13 days | Wed 12/3/08 | Mon 12/22/08 | | | | | | | | | | | | | | | |
| 27 | Final Report - Submitted to APS | 0 days | Mon 1/12/09 | Mon 1/12/09 | | | | | | | | | | | | | | | |
| 28 | Submittal to ACC | 0 days | Fri 1/30/09 | Fri 1/30/09 | | | | | | | | | | | | | | | |

Attachment 4 – Technical Advisor & Stakeholder Groups

Technical Working Group

Purpose: The technical working group will provide technical input on the APS approach and value outcomes for the study. This group will receive scheduled updates on the study status. These meetings will also be the opportunity for these experts to provide guidance and direction.

- Individuals selected based on expertise in this area and ability to provide APS input on scope of project
- Challenge will be getting commitment from these individuals since their time may be very limited

| Last Name | First Name | Organization |
|-------------|------------|----------------------------|
| Key | Tom | EPRI |
| Rastler | Dan | EPRI |
| Margolis | Robert | NREL |
| Kroposki | Ben | NREL |
| Hoff | Tom | Clean Power Research |
| Wiser | Ryan | LBNL |
| Vittal | Vijay | ASU |
| Ayyanar | Raja | ASU |
| Kolb | Greg | Sandia National Laboratory |
| Richmond | Ron | Inter Island Solar Supply |
| Christensen | Craig | NREL – building systems |

Construction Working Group

Purpose: This group will provide technical and project feedback on the findings of the study. Most notable of the input will be identifying possible changes to housing and commercial developments as well as giving feedback on the process identified for achieving the values. Much of this effort will focus on the APS Distribution System portion of the study.

- Could be part of the industry stakeholder group, or a sub-group that looks specifically at the needs and profiles of new construction; good opportunity to work closely with the Distribution team
- Possible coordination with School of Construction at ASU
-

| Last Name | First Name | Organization |
|-----------|------------|-------------------------|
| Kimball | Heidi | Sunbelt Holdings |
| Clifton | Eric | New Land Communities |
| TBD | | DMB |
| TBD | | McCarthy Construction |
| TBD | | Commercial Contractor 2 |
| TBD | | Commercial Developer 1 |
| TBD | | Home builder 1 |
| TBD | | Home builder 2 |

Industry Stakeholder Group

Purpose: The Industry Stakeholder group will provide input and help guide the study. This group will receive scheduled updates on the study status.

- Individuals selected based on interest in promoting distributed solar energy options in Arizona and on ability to provide constructive input to scoping project
- APS prefers to engage industry representatives rather than to engage directly with industry members (e.g. installers, manufacturers)

APS Distributed Renewable Energy Operating Impacts and Valuation Study
Consultant RFP

| Last Name | First Name | Organization |
|------------------|-------------------|---------------------|
| Browning | Adam | Vote Solar |
| Seitz | Sean | AZ SEIA |
| Neary | Mike | AZ SEIA |
| Alston | Tom | Solar Alliance |
| Hennessey | Scott | SEIA |
| Taylor | Mike | SEPA |
| Annan | Bud | Solar Consultant |
| Gilliam | Rick | SunEdison |
| Bibby | Bruce | Natural Daylighting |
| Williamson | Ray | ACC |
| Richerson-Smith | Denise | TEP |
| Hunter | Chico | SRP |

Attachment 5 - APS Confidentiality Agreement

To be provided at award.