

Smart*DER Follow-on Effort(s) Summary



Project Information

Number: 500-00-016

Project Name: Smart*DER Feasibility Field Test

OVERALL PROJECT GOALS

One need only look at the daily newspaper to understand the dynamic nature of the California energy marketplace. There is little question that integration of distributed energy resource (DER) assets into the marketplace has become of paramount importance. This is evidenced by recent legislation that reduces barriers to distributed generation in California and by the numerous programs being promoted by both the CAISO and the California Energy Commission (Commission) targeting increased use of both generation (renewable and conventional) and curtailable loads to alleviate the statewide energy crisis. Integration of these assets into the State's electric supply system has been a long-standing concern. During the Phase I effort (Contract Number 500-98-040), Alternative Energy Systems Consulting, Inc. (Contractor) addressed this area of concern by demonstrating the viability of using a distributed, agent-based technology.

Intelligent agent technology represents a fundamentally different way of addressing the DER asset-scheduling problem. Use of intelligent agent technology provides for a distributed decision-making solution where centralized decision making processes are currently being applied. This fundamental shift in thinking makes the job of transferring this technology into the private sector more challenging since it requires that potential users change the way that they view the problem (and solution). The preceding Phase I project was structured to address this issue by demonstrating the viability of the concept and by providing basic tools (e.g., Test report(s), Demonstration Software) to facilitate the transfer of this technology into the private sector.

The Phase I effort successfully moved this technology to a Stage 3 (Bench testing/proof of concept) level of development and also provided tools that facilitate acceptance of this new technology. The overall goal of this Phase II follow-on effort is to build on the success of the preceding project by testing this new technology in a "real-world" environment to schedule and control DER assets (e.g., distributed generation, curtailable loads, etc.) at multiple sites in California. This project is structured to move this technology beyond Stage 3 and addresses issues related to selecting the correct path (and associated partners, if any) for moving this technology into the marketplace.

The project supports the PIER program objective of improving the reliability and quality in California's electricity system. It also contributes to the PIER program objective of improving the energy cost and value of California's electricity.

TECHNICAL AND ECONOMIC PERFORMANCE OBJECTIVES

The technical performance objectives of this project are to:

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- Update the *Smart*DER*¹ product specification based on feedback received during the Phase I effort as well as changes that have occurred in the California energy marketplace.
- Identify and enlist participation by one or more potential commercialization partners that will integrate *Smart*DER* into their technology for the field test.
- Refine *Smart*DER* technology to reflect changes in the product specification and to provide interfaces with field test participant's software/products.
- Complete a successful feasibility test assessment of *Smart*DER* technology scheduling/controlling actual loads and/or distributed generation assets in the "real world" California marketplace.

The economic performance objective of this project is to:

- Identify and engage one or more partners for continued commercialization of *Smart*DER* technology.

PROJECT START-UP TASKS

- Attend Kick-Off Meeting
- Document Matching Funds
- Identify Required Permits
- Obtain Required Permits

TECHNICAL TASKS

The project's work scope involves the following technical tasks:

- Update *Smart*DER* Product Requirements
- Prepare a Test Plan for the Feasibility Field Test
- Enlist Field Test Participation
- Technology Refinement & Integration
- Feasibility Field Test For Scheduling of Actual DER Assets

As stated previously, the overall goals of this Phase II follow-on effort are to build on the success of the preceding project by refining, integrating and testing *Smart*DER* technology in a "real-world" environment in California.

Task 2.1 Update *Smart*DER* Product Requirements

The purpose of this task is to update *Smart*DER* product requirements to reflect changes in the dynamic California marketplace. The Phase I effort was originally proposed in 1998 and there have been a variety of market developments that affect *Smart*DER* technology since that time. It is important that these changes be identified and incorporated into the technology.

¹ Previously know as Distributed Energy Resource Scheduler (DER*S)

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Task 2.2 Prepare a Test Plan for the Feasibility Field Test

The purpose of this task is to define the Feasibility Field test requirements including:

- Field test objectives,
- Field test participant requirements,
- Field test site requirements, and
- Data collection requirements.

This process must result in a field test that will ultimately enhance the commercialization potential of *Smart**DER technology.

Task 2.3 Enlist Field Test Participation

The purpose of this task is to engage potential field test participants and enlist their participation.

Task 2.4 Technology Refinement & Integration

The purpose of this task is to refine the *Smart**DER software in preparation for integration with other Field Test Participant software and subsequent installation at the Field Test Sites. This will require modification of both the *Smart**DER software (by Contractor) and modification of third party software (by Field Test Participant(s)). This task provides for definition of the necessary modifications, Contractor refinement of *Smart**DER technology and Contractor support of Field Test Participant activities to refine their software/products.

Task 2.5 Feasibility Field Test For Scheduling of Actual DER Assets

The purpose of this task is to conduct a successful Feasibility Field Test of *Smart**DER technology operating at one or more sites to schedule actual DER assets (distributed generation and curtailable loads) in a “real-world” dynamic environment for a 9 – 12 month period.