



## Technical Demonstration and Economic Validation of Geothermal-Produced Electricity from Coproduced Water at Existing Oil/Gas Wells in Texas

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**Universal GeoPower**

- DOE-FOA-0000109
- Technical Demonstration and Economic Validation of Geothermal-Produced Electricity from Coproduced Water at Existing Oil/Gas Wells in Texas
- Liberty County, Texas
- George Alcorn Jr.
- Universal GeoPower
- Pratt & Whitney Power Systems
- SMU Geothermal Laboratory



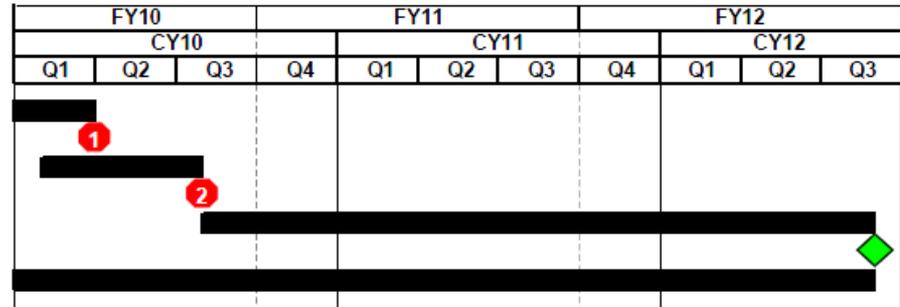
Phase

Title

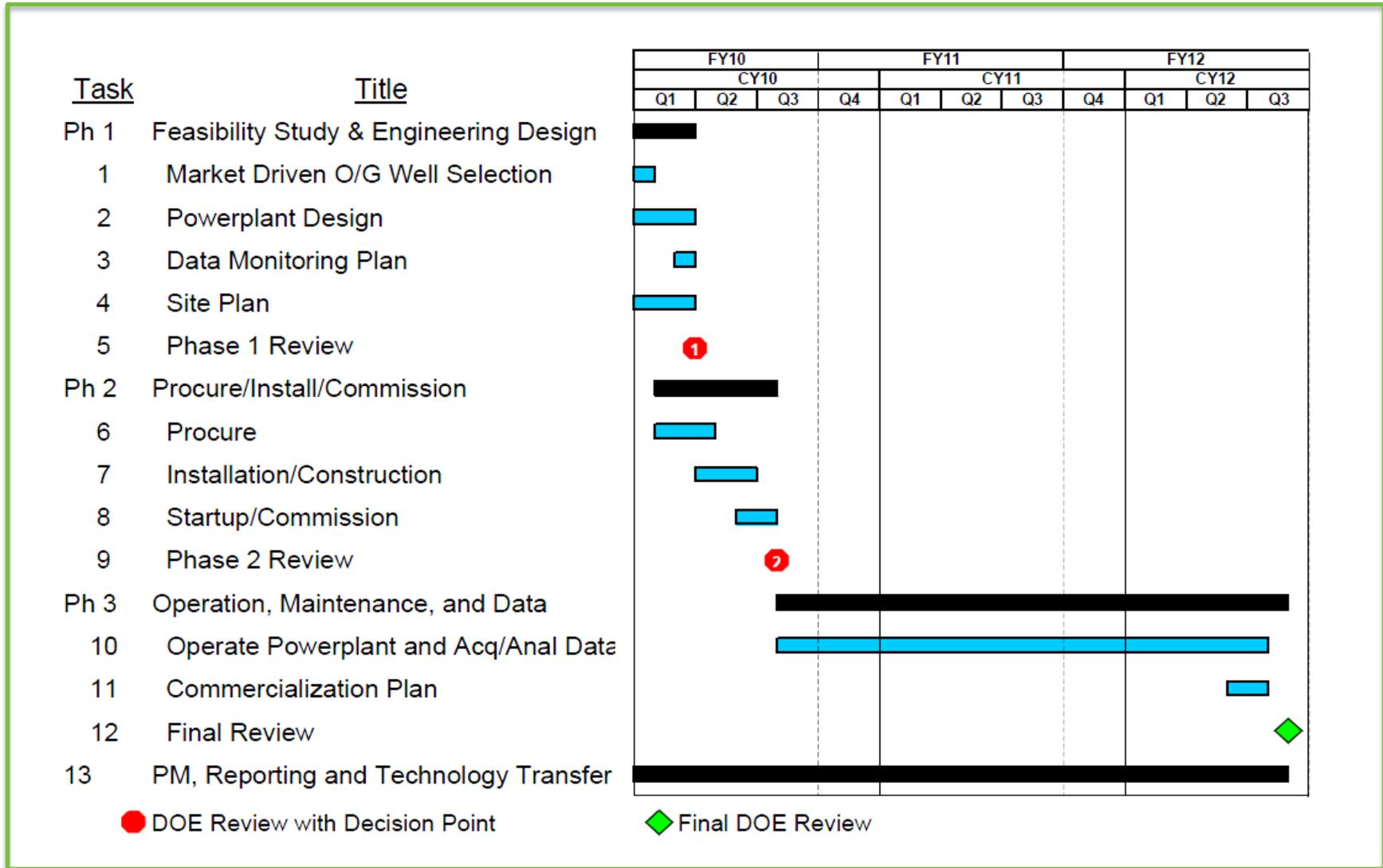
- 1 Feasibility Study & Engineering Design
- 2 Procure/Install/Commission
- 3 Operation, Maintenance, and Data  
PM, Reporting and Technology Transfer

● DOE Review with Decision Point

◆ Final DOE Review



**Figure 1: UGP O/G Project: Three phases with decision point ensures success and rapid execution.**



- **Phase 1 Feasibility Study and Engineering Design**
- **Task 1** Market Driven O/G Well Selection
- *Milestone: Memo to DOE confirming O/G well selection*
- *Scope: Review market opportunity assessment; validate candidate well characteristics (temperature, flow rate, chemistry) and its alignment to market opportunity; review powerplant performance and economic projections; prepare memo identifying selected well and alignment of its characteristics with technical and economic projections.*
- **Task 2** Powerplant Design
- *Milestone: Final Powerplant Design drawings*
- *Scope: Prepare, and review with Team, the preliminary powerplant design, defining all mechanical, electrical, thermal, fluid, and command/control interfaces; refine design; prepare final powerplant design including all drawings required for assembly, installation, and maintenance.*
- **Task 3** Data Monitoring Plan
- *Milestone: Document defining powerplant data collection, transmission, and analysis methodologies*
- *Scope: Define desired powerplant performance parameters; identify required powerplant data measurements; specify hardware and software to acquire/store/transfer powerplant data; prepare Plan.*
- **Task 4** Site Plan
- *Milestone: Site Drawing with Layout and O/G Well Rework*
- *Scope: Prepare, and review with Team, the initial site layout of powerplant, well and other equipment, including surface preparation, well rework, and hydrocarbon recovery; refine site layout; prepare final Site Plan with drawings; satisfy all codes and permits.*
- **Task 5** Phase 1 Review
- *Milestone: Review Phase 1 drawings and plans with DOE*
- *Scope: Conduct review with Team and DOE, preferably at location that permits a visit to the well site. DOE approval is required to proceed to Phase 2 site work; permission to procure long lead time components during Phase 1 will be requested.*

- **Phase 2 Procurement, Installation, and Commissioning**
- **Task 6** Procure
- *Milestone: All powerplant components delivered to site*
- *Scope: Procure all powerplant components. DOE permission will be requested to order long lead time components to preserve the project schedule.*
- **Task 7** Installation/Construction
- *Milestone: Completed powerplant installation*
- *Scope: Prepare the site, including well re-work, according to the Site Plan; assemble/construct/install the powerplant components, completing all mechanical, electrical, fluid, and thermal interfaces.*
- **Task 8** Startup/Commission
- *Milestone: Completed powerplant commissioning for continuous operation*
- *Scope: Verify proper installation and all interfaces; validate safe interconnection, leak check and charge system; validate expected steady-state and transient response characteristics against powerplant projections and requirements; validate remote monitoring and data collection systems; train local personnel.*
- **Task 9** Phase 2 Review
- *Milestone: Review Phase 2, emphasizing lessons-learned, with DOE*
- *Scope: Conduct review with Team and DOE, preferably at location that permits a visit to the operating well site. DOE approval is required to proceed to Phase 3 unless prior approval is received to accommodate project objectives.*

- **Phase 3 Operation, Maintenance, and Data**
- **Task 10** Operate Powerplant and Acquire/Analyze/Distribute Data
- *Milestone: Maintain the flow of data from the powerplant to the Team and the host of the National Geothermal Data System for 2 years of operation.*
- *Scope: Collect/analyze/transmit powerplant data in accordance with the Data Monitoring Plan*
- **Task 11** Commercialization Plan
- *Milestone: Document outlining commercialization steps, practices, and channels*
- *Scope: Identify commercialization partners and supply chain channels; define marketing strategy.*
- **Task 12** Final Review
- *Milestone: Final Review with DOE, including lessons-learned, ensemble powerplant performance, environmental benefits, and economic impact potential*
- *Scope: Conduct review with Team and DOE.*
- **Task 13** Project Management, Reporting, and Technology Transfer (Single Task for all Phases)
- *Milestone: Submit Final Report*
- *Scope: Monitor technical accomplishment and financial expenditure against plan, taking measures to correct variations and report significant deviations to DOE; comply with all reporting requirements specified by the Federal Assistance Reporting Checklist following the instructions therein; engage in technology transfer activities including participation in geothermal forums such as the annual, SMU hosted Geothermal Energy Utilization Conference.*