



CITY OF LODI

COUNCIL COMMUNICATION

AGENDA TITLE: Engineering Services for 230 KV Interconnection Project Phase II (\$75,020)
MEETING DATE: March 5, 1997
SUBMITTED BY: Electric Utility Director

RECOMMENDED ACTION: That the City Council adopt the attached resolution authorizing the City Manager to enter a personal services contract with Power Engineers, Inc. for the 230 KV Interconnection Project Phase 2 - Preliminary Engineering.

BACKGROUND: On November 6, 1996, the City Council authorized a 230 KV west interconnection scoping study. The results of this study were given to each councilmember at the February 19, 1997 council meeting. This scoping study accomplished three things:

- analyzed previous studies conducted by NCPA, Western and PG&E;
- provided and reviewed cost estimates for various options;
- made recommendations as to the steps the City should take to continue with this project.

Continuing the project into Phase 2 - Preliminary Engineering is recommended. This phase includes the preliminary engineering, siting and routing tasks in order to provide the City with the analysis and drawings necessary to start the detailed design and engineering phases. It also provides the necessary steps required for the initial study under the California Environmental Quality Act (CEQA) which will determine the level of environmental permitting required for the project. The Community Development Department will be the lead agency for addressing CEQA activities.

FUNDING: NCPA Phase IIA Resource Development Fund
Estimated Cost: \$75,020

Alan N. Vallow
Electric Utility Director

Prepared by Mel Grandi, Manager, Electric Services

Attachment

ANV/MG/sh

cc: City Attorney
Director, Business Planning and Marketing

PROVED

H. Dixon Flynn
CITY MANAGER

February 26, 1997

February 24, 1997

Mr. Alan Vallow
City of Lodi
Electric Utility Department
1331 South Ham Lane
Lodi, California 95242-3995

Subject: 230kV Interconnection Project
Engineering Work Plan for Preliminary Engineering

Dear Alan:

As you requested, we have prepared a Work Plan describing the initial tasks required for the 230kV Interconnection Project. The Work Plan includes five tasks to accomplish the initial project objectives.

Completion of these tasks, which include the preliminary engineering and the routing and siting tasks, would provide the City with the information, analyses and drawings needed to start the actual design and engineering phases. Also, the steps required for an Initial Study under CEQA, which will determine the level of environmental permitting required for the project, are described in Task 2.

The Work Plan is as follows:

TASK 1 SYSTEM STUDIES

Objective: To help the City determine the system configuration, new 60kV transmission line size and tie locations and operating criteria for the system with the addition of the new 230kV interconnection. The deliverables produced in this task will allow the engineering and design of the new facilities to proceed and will outline the operational possibilities and constraints for the new system.

Approach:

- Establish the new 60kV facility requirements and operational capabilities and limitations for the new system.

Interconnection Analyses: Draft a letter for the City to forward to NCPA, PG&E and/or Western requesting the desired additional load flow simulations for two scenarios: future system loading beyond the loading limits used in previous studies, and conditions where the existing 60kV system and the new 60kV system are electrically interconnected. Also, request any revised mitigation cost estimates for the cases already studied and new mitigation cost estimates for any new cases to be studied. We will provide a technical review of the results and prepare a letter report outlining our conclusions and recommendations for discussion and ultimate inclusion into the Final Report.

60kV Transmission Analysis: In conjunction with the City, determine the desired normal and emergency circuit loading capacity for the new 60kV interconnect transmission line(s) and the possible locations and configurations for the 60kV ties to the existing system. Consider existing City criteria, line construction impacts, relative losses, physical constraints and operational flexibility in determining the desired conductor and system configuration. Forward a letter report outlining the findings to the City for discussion and ultimate inclusion into the Final Report.

12kV Loop Feed Investigation: Using a WSCC database provided by PG&E, Western, NCPA or one retrieved from the FERC Bulletin Board, add the elements to model the City's 60kV transmission system including the 60-12kV distribution substations. In conjunction with the City, select possible 12kV circuits that could be switched to connect one substation 12kV bus to another 12kV substation bus under conditions when the 12kV buses are served from separate transmission sources. Add a simplified model of each 12kV tie circuit to the system model to simulate the looped connection. To simulate actual conditions, assume that the simplified 12kV tie circuit would consist of no more than eight (8) line sections with loads distributed along the line. Perform six (6) system configurations and load flow simulations to determine the operational constraints of looping the system through the 12kV distribution network. Prepare and forward to the City for discussion and ultimate inclusion into the Final Report a letter report outlining the findings and recommendations for potential loop feeds within the 12kV system.

Deliverables:

- Draft Letter to Forward to NCPA, PG&E and/or Western
- Technical Review of Additional Interconnection Analyses
- Recommended 60kV Transmission Conductor Type and Size
- Recommended Tie Location(s) for the Connection of the New 60kV Line(s) to the Existing System
- Summary of 12kV Loop Flow Results

Assumptions:

- NCPA, PG&E and/or Western will conduct the additional interconnect studies.
- Tie locations will be investigated in conjunction with the Task 2 efforts.
- The City will provide 12kV backbone feeder and loading information.
- The 12kV loop studies will be limited to six (6) load flow scenarios.

TASK 2 INITIAL SITE & ROUTING STUDIES

Objectives: To identify a feasible substation site and transmission line routes. To identify existing land rights for transmission line alternative routes. To prepare an Initial Study to determine CEQA compliance requirements and predict probable environmental impacts.

Approach:

- Investigate the two substation sites under consideration. Determine the advantages and disadvantages of using either site.
- Define the licensing and permitting requirements for each substation site in conjunction with engineering design and City preferences.
- Conduct a preliminary routing study to identify the feasible 230kV transmission intertie tap configurations from the Western lines to the selected substation site and for the line routes to connect the selected substation site to the City's 60kV system.
- Identify the land rights along the potential line routes.
- In order to determine the appropriate CEQA action required, prepare an Initial Study.

Substation Siting Study: Investigate the two substation sites under consideration near the STIG site (Wastewater Lagoon and west side of transmission corridor). Determine the advantages and disadvantages of each site. Identify the licensing and permitting requirements for each site and potential environmental impacts associated with developing each site. Prepare a Technical Memorandum documenting the findings of the study and incorporate final version into the Initial Study Report.

Preliminary Routing Study: Conduct a feasibility level routing study for intertie line routes from the Western 230kV line to the selected 230kV substation site, and from the selected substation site to the City's 60kV system. The study will focus on the identification and description of an efficient and feasible line route to connect the selected substation site with the City's 60kV system. Prepare a Technical Memorandum describing the study's methods and results and include in the Initial Study Report.

Land Rights Identification: Determine the land rights the City has or would need to acquire along the alternative routes identified from the Preliminary Routing Study. Determine franchise rights or existing easement conditions. Prepare a Technical Memorandum documenting the findings of the study and incorporate the final version into the Initial Study Report.

Initial Study Report: Prepare an Initial Study Report which documents the project in accordance with CEQA requirements to assist the Lead Agency (assumed to be the City of Lodi) in determining if the project has the potential to have a significant impact on the environment. Incorporate all technical memorandums from prior subtasks into the Initial Study Report.

Prepare a brief Statement of Need for the project and a Project Description. Prepare the appropriate Initial Study forms and an Environmental Checklist as required by CEQA.

Submit the draft Initial Study to the City for review. Incorporate the comments from the City and submit a final Initial Study to the Lead Agency for processing and evaluation.

Provide support to City staff to ensure notification of the Initial Study is made to the State Clearinghouse and to the public.

If requested by the City, provide responses to agency and public comments and attend a Certification Hearing. Also if requested by the City, develop landowner notifications of a Negative Declaration.

Note: If the Initial Study determines the project will not have a significant effect on the environment and a "Negative Declaration" determination is made, no further environmental work for CEQA clearance is needed.

Deliverables:

- Technical Memorandum Recommending Preferred Substation Site
- Technical Memorandum Documenting Routing Study Methods, Results and Recommendations
- Draft and Final Initial Study Report per CEQA

Assumptions:

- The preparation of responses to the agency and public comments, attendance at a Certification Hearing and development of landowner notifications of a Negative Declaration are not budgeted in this work plan. These services, if requested, would be provided to the City on a time-and-material basis according to the approved Schedule of Charges.
- Approximately 8.5 miles of line route will be needed to tie into the City's 60kV system.
- Only existing utility line or transportation corridors will be evaluated.

TASK 3 INTERCONNECTION SUBSTATION

Objective: To develop the preferred substation configuration to the level necessary for initiating the detailed design and engineering effort.

Approach:

- Meet with the City to discuss substation configuration options.
- Provide a recommendation for the preferred configuration.
- Prepare One-Line Diagram and General Arrangement Drawing and the Substation Design Criteria.
- Prepare a substation Cost Estimate.

Configuration Selection: Prepare and provide to the City a document discussing the various commonly used substation switching configurations to serve as a basis for discussions regarding the switching configuration to be used for the new station. Discuss in the document the advantages, disadvantages and relative costs of each commonly used design. Include in the document example switching diagrams to illustrate each configuration.

Schedule and attend a meeting in the City's office to discuss the document and application to the new interconnection substation. As a tool to facilitate discussions, prepare preliminary switching diagrams for a maximum of three options to illustrate how the configurations could be applied to the new station. Analyze the various switching configurations based on the City's input and select one configuration for preliminary design. Prepare for review by the City and Western a document outlining the reasons for selecting the recommended configuration.

Preliminary One-Line Diagram: Prepare the Preliminary One-Line Diagram for the selected substation configuration. Illustrate the general bus arrangement, interconnection of relaying, metering, SCADA, relaying communications, transformers, circuit breakers, and other devices. Determine metering and relaying locations and requirements and indicate the location of the CTs and VTs. Identify major equipment ratings on the drawing.

General Arrangement Plan: Prepare the General Arrangement Plan for the selected substation configuration. Depict the physical bus arrangement and configuration, line entries and exits, transformer, circuit breaker and switch locations, cable trench location, substation baselines and perimeters, control building, etc. Identify and note bus connections and phasing on the drawing.

Design Criteria: Review available data and summarize proposed analysis and design procedures and criteria for inclusion into a Substation Design Criteria Document. Coordinate and review the development of the document with the City.

Cost Estimate: Prepare a Cost Estimate for the selected substation configuration based on the Preliminary General Arrangement Plan. Include unit prices for labor and material. Develop an extension based on the quantity required for each unit.

Deliverables:

- Substation Switching Configurations Document
- One (1) Preliminary One-Line Diagram
- One (1) Preliminary General Arrangement Plan Drawing
- Substation Design Criteria Document
- Substation Cost Estimate

TASK 4 TRANSMISSION LINES

Objective: To develop the preferred transmission lines configurations to the level necessary for initiating the detailed design and engineering effort.

Approach:

- In conjunction with the Task 2 Initial Site and Routing efforts, provide engineering input to determine the preferred location for the new substation and the preferred routing for the 230kV and 60kV lines.
- Develop preliminary drawings, design criteria and cost estimates for the preferred transmission line routings and structure configurations.

Routing Selection: Provide engineering, preliminary design and technical support to the Preliminary Routing Study for routing the 230kV transmission line tap to either PG&E or Western, 230kV line from the interconnection substation to the 230kV Substation at Lodi located adjacent to the STIG site, and the 60V lines from the new substation to the City's 60kV transmission system. Ensure that the applicable engineering and design considerations are evaluated for each of the studied routes.

Plan Drawings: Prepare Preliminary Plan Drawings showing the preferred 230kV routing and tower locations for interconnection from the new substation to either the Western or PG&E transmission lines and for interconnecting the new substation with the 230kV Substation at Lodi. Prepare a Plan Drawing showing the routing of the 60kV lines from the preferred new substation site to the City's 60kV transmission system. Prepare the drawings with sufficient detail to show approximate structure locations, routing of the 60kV from the new substation and interconnection with the City's 60kV lines.

Structure Drawings: Prepare Conceptual Structure Drawings for the both the steel towers that will be required for the 230kV tap and the wood structures for the 60kV lines. Utilize existing drawings and/or develop conceptual drawings for tangent, angle, deadends, tap and switch structures for both steel and wood structures.

Design Criteria: Review available data and summarize proposed analysis and design procedures and criteria for inclusion into a Line Design Criteria Document. Coordinate and review the development of the document with the City.

Cost Estimate: Prepare Cost Estimates for the preferred 230kV tap and 60kV line configuration based on the Preliminary Plan Drawing. Include unit prices for labor and material. Develop an extension based on the quantity required for each unit.

Deliverables:

- Preliminary Plan Drawings
- Conceptual Structure Drawings
- Line Design Criteria Document
- Cost Estimates

TASK 5 PRELIMINARY ENGINEERING REPORT

Objective: To prepare a report incorporating all the preliminary engineering deliverables in Tasks 1, 3 and 4 into one report. Task 2, Initial Study Report, will be a separate document and will not be included in the Preliminary Engineering Report.

Approach:

- Prepare a Draft Preliminary Engineering Report for the City's review and approval prior to issuing a Final Preliminary Engineering Report.

Deliverables:

- Draft and Final Preliminary Engineering Reports

BUDGET FOR TASKS 1-5

The cost of the labor and expenses required to complete the work these tasks are noted below. Project management and administration are included in the costs. Also, a project initiation meeting with two follow-up project meetings for a total of three meetings are budgeted. Estimated costs are based on performing the work on a time-and-expense basis according to the attached Schedule of Charges.

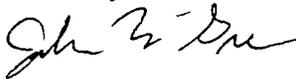
TASK	Hours	Labor \$	Expense \$	L&E \$
1 System Studies	81	6,725	1,225	7,950
2 Initial Site & Routing Studies	434	33,580	4,035	37,615
3 Interconnection Substation	148	10,730	1,110	11,840
4 Transmission Lines	176	12,680	2,825	15,505
5 Preliminary Engineering Report	20	1,460	650	2,110
Phase I Total	859	65,175	9,845	75,020

City of Lodi
February 21, 1997
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We could complete the work within two months of Notice to Proceed. This assumes timely performances and receipt of all studies and work that needs to be completed by others for inclusion into our effort as defined in the Work Plan.

If you have any questions or comments regarding our approach for performing the work for this project, please call Randy Pollock, Jeff Mann or me at (208) 788-3456.

Sincerely,



John McGrew
Project Manager

cc: Mel Grandi
Randy Pollock
Jeff Mann
Stan Sostrom
RM/REF 120477

POWER ENGINEERS INC.
SCHEDULE OF CHARGES - 1997
FOR CITY OF LODI

This standard Schedule of Charges is for professional services. Unless agreed otherwise, charges for work on continuing projects will be based on the then current Schedule of Charges. A new Schedule of Charges will be issued to be effective January 1 of each new year and as necessary on an intermediate basis to accommodate new items or revised charges. Invoices will be submitted monthly and/or upon completion of the work and will be due and payable when issued. All accounts not paid within thirty (30) days after Owner's receipt of the invoice will bear a SERVICE CHARGE OF 1.5% PER MONTH for each month the invoice is unpaid.

PERSONNEL CLASSIFICATION

Senior Project Manager.....	\$110.00/hr.
Principal Consultant	
Project Manager.....	\$100.00/hr.
Senior Consultant	
Project Engineer.....	\$95.00/hr.
Consultant	
Senior Project Administrator	
Supervisory R-O-W Agent	
Engineer III.....	\$85.00/hr.
Designer IV	
Engineering Technician IV	
Environmental Specialist III	
Senior R-O-W Agent	
Engineer II.....	\$75.00/hr.
Designer III	
Engineering Technician III	
Environmental Specialist II	
Purchasing Agent	
Senior Administrator	
R-O-W Agent	
Engineer I.....	\$65.00/hr.
Designer II	
Engineering Technician II	
Environmental Specialist I	
Administrator	
Field Representative IV	
Senior Purchasing Specialist	
Designer I.....	\$55.00/hr.
Engineering Technician I	
Administrative Assistant	
Field Representative III	
Purchasing Specialist	
Drafter.....	\$45.00/hr.
Staff Assistant	
Field Representative II	
Typist.....	\$35.00/hr.
Data Entry Operator	
Field Representative I	
Utility	

No premium is charged for overtime work. Personnel with specialized experience are employed by or on retainer to POWER. Charges for these specialists are negotiated on an individual basis depending on the assignment. Professional time for depositions and testimony is charged at 1.5 times the rate for services; full-day minimums apply.

POWER ENGINEERS, INC.
SCHEDULE OF CHARGES - 1997
FOR CITY OF LODI

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COMPUTER SERVICES

GIS Workstation	\$35.00/hr.
...includes software	
Engineering Workstation	\$35.00/hr.
...includes specialized software*	
Personal Computer	\$10.00/hr.
...includes standard software charges for special software will be added, see "Special Application Software Fee Rates".	
Drafting Station w/software	\$20.00/hr.
...may include Autocad, Microstation	

SPECIAL APPLICATION PC SOFTWARE

Structure Spotting/Optimization**	\$60.00/hr.
Electrocon Software w/Computer**	\$60.00/hr.
Level I Software***	\$10.00/hr.
Level II Software****	\$20.00/hr.

SURVEY SUPPLIES

Plastic Aerial Panels	\$1.50/ea.
Wood Stakes	\$10.25/bd.
4' Lath	\$14.95/bd.
Flagging	\$1.35/ea.
#5 x 20" Rebar	\$.75/ea.
Rebar Caps	\$.50/ea.
Marking Paint	\$4.50/ea.
Field Books	\$6.75/ea.

SURVEY EQUIPMENT

Survey Equip. to support field crew	\$115.00/day
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TRANSPORTATION

Cessna 210 (Wet, with Pilot)	\$205.00/hr.
Pilot Standby	\$30.00/hr.
Commander 840	\$590.00/hr.

PHOTOGRAPHIC RECORDING

Portable Video Camera	\$35.00/day
Video Tapes	\$8.00/ea.

REPRODUCTION

Blueline (C Size)	\$0.50/ea.
Electrostatic (C Size)	\$1.00/ea.
Blueline (D Size)	\$1.50/ea.
Electrostatic (D Size)	\$3.00/ea.
Blueline (E Size)	\$2.50/ea.
Electrostatic (E Size)	\$5.00/ea.
Mylar (C Size)	\$3.00/ea.
Mylar (D Size)	\$7.00/ea.
Mylar (E Size)	\$10.00/ea.
Vellum (C Size)	\$2.00/ea.
Vellum (D Size)	\$4.00/ea.
Vellum (E Size)	\$6.00/ea.

CAMERA WORK

9" x 12" PMT	\$10.00/ea.
12" x 18" PMT	\$13.00/ea.
18" x 24" PMT	\$14.00/ea.
20" x 24" PMT	\$15.00/ea.
12" x 18" Mylar	\$15.00/ea.
18" x 24" Mylar	\$16.00/ea.
20" x 24" Mylar	\$17.00/ea.
12" x 18" Clear	\$15.00/ea.
18" x 24" Clear	\$16.00/ea.
20" x 24" Clear	\$17.00/ea.

DOCUMENTS

Single-sided Copies	\$0.05/ea.
Double-sided Copies	\$0.10/ea.
Spiral Comb	\$5.00/ea.
3 Ring Binder	\$12.00/ea.

SHIPPING

Box or Tube	\$1.50/ea.
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Other expenses such as subcontractors, rental equipment, photography, transportation, rental vehicles, shipping, outside computer services, lodging, meals, other reproduction, long distance telephone, telecopier, express mail, courier/delivery service, special supplies, are charged at cost plus a carrying and handling charge of 10%.

* Specialized software included in the UNIX/NT Engineering Workstation fee are the following Intergraph packages: FRAME WORKS PLUS, MODELVIEW, INROADS, INSITE, IRASC, EEWPD, INFLOW, INFORMIX, PROJECT ARCHITECT, PLANT DESIGN SYSTEMS

** Structure Spotting/Optimization and Electrocon will normally be billed on a specific project basis.

*** Includes, among others CPM, Traverse PC, Structural Design, Foundation Design, HVAC Design, and Conveyor Design.

**** Includes, among others Distribution Power System Analysis, Piping Design, Cost of Service/Rate Review, Transmission System Analysis and specialized estimating programs.

RESOLUTION NO. 97-29

A RESOLUTION OF THE LODI CITY COUNCIL
AUTHORIZING THE ELECTRIC UTILITY DIRECTOR TO ENTER
CONTRACT WITH POWER ENGINEERS, INC., FOR THE 230 KV
INTERCONNECTION PROJECT PHASE 2 - PRELIMINARY ENGINEERING

BE IT RESOLVED that the Electric Utility Director is hereby authorized and directed on behalf of the Lodi City Council, to enter a contract with Power Engineers, Inc., for the 230 KV Interconnection Project Phase 2 - Preliminary Engineering.

Dated: March 5, 1997

I hereby certify that Resolution No. 97-29 was passed and adopted by the City Council of the City of Lodi in a regular meeting held March 5, 1997, by the following vote:

AYES: COUNCIL MEMBERS -
NOES: COUNCIL MEMBERS -
ABSENT: COUNCIL MEMBERS -
ABSTAIN: COUNCIL MEMBERS -

JENNIFER M. PERRIN
City Clerk