

# CO<sub>2</sub> Enhanced Hydrocarbon Recovery

Forums Workshops TIS RFPs Projects Technical Links Technical Steering Committee

**Request for** 2007 02

**Proposal Design and Cost Estimate for the Collection of CO<sub>2</sub> Emissions in the Fort Saskatchewan Area for Use in Enhanced Hydrocarbon Recovery (Revised)**

RFP Revised RFP Expression of Interest Process and Procedural Rules FAQs

## REQUEST FOR PROPOSAL CO<sub>2</sub>-2006-01 (REVISED 02-2007)

The PTAC CO<sub>2</sub> Enhanced Hydrocarbon Recovery (EHR) Steering Committee requests proposals to design and cost estimate a CO<sub>2</sub> collection system to aggregate CO<sub>2</sub> in the Fort Saskatchewan area of Alberta. The steering committee believes that sufficient CO<sub>2</sub> exists or will exist in the Fort Saskatchewan area to support commercial scale enhanced recovery of conventional oil in Alberta (for example, potential EHR fields at Redwater, Pembina and Swan Hills). Large CO<sub>2</sub> supplies currently exist at refineries and upgraders and several new facilities are proposed for the Fort Saskatchewan area.

The objective of the study is to quantify the capital and operating cost involved to aggregate CO<sub>2</sub> for EHR. At minimum, it is desired to have a project scope developed with an approximate +/-40% capital and operating cost estimate undertaken. The study will evaluate at least three representative CO<sub>2</sub> sources in order to understand what is required to aggregate different quality types of CO<sub>2</sub>. Several companies have agreed to provide CO<sub>2</sub> quantity and quality information in support of this study as follows.

Quality types and sources of CO<sub>2</sub>:

1. High purity CO<sub>2</sub> from Synenco's proposed upgrader and gasifier.
  - ▣ Estimated 10,000 T/d of 98% purity CO<sub>2</sub> at low pressure
2. Medium purity CO<sub>2</sub> from Shell's Scotford upgrader and refinery
  - ▣ Estimated 3,300 T/d of 45% purity from existing upgrader
  - ▣ Estimated 1,100 T/d of 45% purity from existing refinery
3. High and medium purity CO<sub>2</sub> from Petro-Canada's proposed Fort Hills project upgrader and existing refinery.
  - ▣ Volume and purity to be defined

The above CO<sub>2</sub> sources represent the expected facility processes that could supply the lowest cost CO<sub>2</sub> for commercial EHR projects. High purity CO<sub>2</sub> is anticipated from Synenco's gasifier process as a result of hydrogen production. Shell and Petro-Canada processes represent potential steam-methane-reforming hydrogen production, which generally create medium purity CO<sub>2</sub> gas streams. The intent of this study is to clarify what is required to capture, process and aggregate these difference CO<sub>2</sub> streams to a high pressure appropriate for pipeline transport to EHR reservoirs.

The basic elements of the proposed design and cost estimate study are as follows:

1. Collection of CO<sub>2</sub> at the available quality and pressure at emissions sites. Determine alternatives of process and design to aggregate to a common pipeline system. Process design may include purification, dehydration and compression requirements.
2. Design a pipeline system to collect CO<sub>2</sub> from each source. Study the merits of a common compression site (location to be determined) to achieve ~2700 psig system pressure required for pipeline transport to EHR reservoirs.
3. The study is to estimate the capital and operating cost for the collection for each CO<sub>2</sub> supply. Identify processes necessary to achieve 95% CO<sub>2</sub> purity. Identify type and quantity of non-CO<sub>2</sub> impurities.
4. The study scope will only include the required pipeline infrastructure to aggregate CO<sub>2</sub> to a common location. The study does not include pipelines to EHR fields at this time.
5. Key results and conclusions of the study will be available to the public upon completion.
6. Appropriate documentation must be maintained in the event the study is enhanced or expanded in the future. (confidential status of detailed information to be defined by the contractor and project funders)

**Project Contractor**

The contractor should be expert, preferably with direct experience, in the design, cost estimation and construction management of CO2 collection, dehydration, compression and pipeline facilities with delivery of CO2 for use in enhanced hydrocarbon recovery operations

Experience with design requirements for Canadian or Northern USA environmental conditions will be an asset

The 4 previous proponents that were short listed for this work will be the only contractors that are given the opportunity to provide revised proposals.

#### Timing

The project results are expected within approximately three months of an anticipated contract award\* date of April 6, 2007. The final completion is anticipated before the end of August, 2007.

Proposals should be submitted electronically to **Sarah-Jane Downing** of PTAC at [sdowning@ptac.org](mailto:sdowning@ptac.org) no later than March 15, 2007. Proposal presentations to the project funders will be scheduled for late March 2007. Technical questions should be emailed to Todd Cole at [tcole@arcresources.com](mailto:tcole@arcresources.com) with cc: Eric Lloyd at [elloyd@ptac.org](mailto:elloyd@ptac.org).

\* PTAC will not screen, evaluate or make decisions on what will proceed. The project funders will make such decisions

#### Revised RFP FAQs

1. **Will the CO2 need to be purified to meet a specific specification?**
  - ▣ Yes, 95% minimum purity for CO2 pipeline transportation. Scope of work to identify impurities and most economic processes and locations to purify.
2. **Will the CO2 need to be metered separately coming from each source?**
  - ▣ Yes, custody transfer measurement of CO2 is required
3. **What will be the receipt conditions from each source (pressure, temperature, water content, quality)?**
  - ▣ Accept "as is" at each plant. Each CO2 supplier has agreed to disclose specific specifications of existing or expected CO2 emissions. The study will determine if full compression to 2700 psig should be achieved at each source, or if a lower pressure gathering system to a central compression station is more economic
4. **What are the delivery conditions required (pressure, temperature, quality)?**
  - ▣ The delivery conditions to a central compression terminal or pipeline to be defined by contractor. Delivery pressure for final transport to EHR fields is approximately 2700 psig.

to top

For further information,  
please contact:

**Sarah-Jane Downing**, PTAC  
Technology Initiatives and  
Communications Coordinator  
phone 403 218-7704  
fax 403 920-0054  
[sdowning@ptac.org](mailto:sdowning@ptac.org)

#### DISCLAIMER

PTAC is only a facilitator for these presentations. PTAC makes no representation regarding ownership or quality of any technology described by a presenter, or generally as to the contents of a presentation. PTAC does not endorse any presenter nor the technology presented. Please use your own judgment. PTAC trusts that each presenter will engage in fair trade practices, but does not police or otherwise enforce this policy in any manner

2007 02 23 LF