




Hydrogen Energy California (HECA) a low-carbon power project

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General HECA Overview



- Located in western Kern County, California
- Fully integrated IGCC with carbon capture (90%)
- GE Quench Gasification & GE 7F Syngas turbine
- Located near industrial water supply, gas and transmission infrastructure
- Close proximity to feedstock trans-loading (western bituminous coal and petcoke from CA refineries)
- Adjacent to Occidental of Elk Hills Oil Field where the CO₂ will be used for EOR & sequestered

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HECA Project Objectives



- Commercial-scale IGCC with 90% CO₂ Capture
- Utilize hydrogen-rich fuel to generate 250+ MW net of low-carbon base load power
- Capture: ~2 million tons of CO₂ for enhanced oil recovery and sequestration in adjacent oil fields
- Operate with feedstock flexibility by utilizing a range of feedstock from western bituminous coal to petroleum coke from CA refineries
- Preserve limited fresh water by utilizing 100% brackish water for plant needs, Zero Liquid Discharge (ZLD) technology and maximum internal water recycling



HECA Milestones

- July 2009 – Received award under DOE Clean Coal Power Initiative
- September 2009 - Cooperative Agreement signed
 - Overall Project Value \$2.8 billion
(includes costs during demonstration phase but excludes all revenues)
 - DOE Cost Share \$308 million
- Milestone Dates:
 - 2012 - Full Project Sanction from Shareholders
 - 2015 - Mechanical Completion
 - Demonstration Phase/ Commercial Operation 2016



HECA Permitting Progress

- May 2009, Application for Certification (AFC) submitted to the CEC
- June 2010, Preliminary Determination of Compliance (PDOC) issued by San Joaquin Valley Air Pollution Control District
- August 2010, Preliminary Staff Assessment (Part 1) issued
- HECA regards the PSA as positive:
 - No changes to FEED scope
 - Comments around dust mitigation and trucking emissions can be addressed
- Over 150 data requests addressed, 3 public workshops & 2 EOR workshops led by Oxy



HECA Permitting Progress

- EPA and CEC have submitted comments on PDOC, generally focused on:
 - PM10 and PM2.5 emissions limits, speciation assumptions
 - CTG PM emissions (syngas vs NG)
 - Cooling Tower PM emissions
 - Minor comments on measurements and enforceability
 - CEC is Cooperating Agency for NEPA Process
 - HECA is the process of finalizing responses to these comments
 - Bifurcated PSA was requested by HECA to provide measure of permitting certainty prior to commencing FEED activities
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|---------------------|----------------------------|-------------------------------|
| • Air Quality | • Traffic & Transportation | • Geology & Paleontology |
| • Hazmat | • Transmission | • PP Efficiency & Reliability |
| • Noise & vibration | • Worker Safety | |
| • Public Health | • Facility Design | |
| • Socioeconomic | | |



Engineering Progress

- Signed GE License Agreement, completed gasification Process Design Package including PFD, H&MB, P&ID
- Selected AGR licensor, Linde
- Selected SRU licensor, Fluor
- Open solicitations : ASU and Main Automation Contractor
- FEED PFD development for Shift, SWS, BOP, AGR, SRU, Power Engineering in progress
- GE Turbine Operability Study completed
- Completed numerous studies; Transportation, Geotech, ETAP, Flare, CII Constructability, civil/structural, solids handling
- Completed Basis of Design for end of pre-FEED
- Completed development and issued 30 Design Philosophies



Engineering Progress, next steps

- Completion in 4Q10 of the following PDP's commenced in Select:
 - AGR (>50% complete at end of Select)
 - SRU/TGTU (>50% complete at end of Select)
- Fluor FEED, water treatment FEED, solids handling FEED
- Main Automation Contractor work for FEED phase
- GE turbine combustion tests, and FEED support work
- Select ASU provider, complete ASU FEED
- PFD & P&ID Design Reviews
- Safety studies and reviews



Commercial Progress, CO₂ Off-take

- **HECA and Oxy signed a General Letter Agreement in 2Q2010**
 - Product Specification
 - Product Volumes & Rates
 - Delivery Point
 - Delivery Pressure
 - Pricing Structure
- **HECA and Oxy signed an in-depth LOI in 3Q2010**
 - Contract Term
 - Commissioning
 - Various obligations



Commercial Progress, Power & Feedstock

- PPA negotiations were slightly delayed due to anti-trust concerns from utilities
 - Unanimous PUC decision allowed parallel negotiations
 - Third unanimous decision in HECA-related proceedings
- HECA is negotiating with SCE, PG&E and SDG&E
 - Term sheets have been exchanged and expected to be signed this quarter
- Feedstock Supply
 - LOI signed with Savage Corporation for Wasco transloading terminal

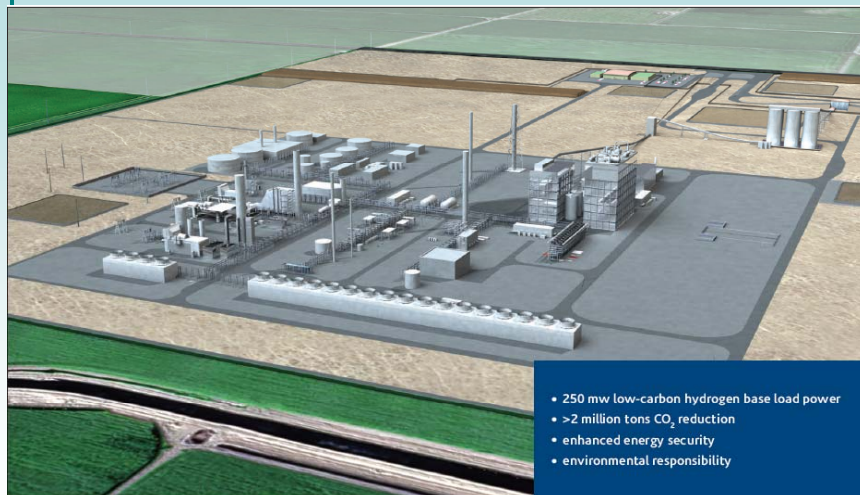


HECA- Industry/State/Federal Partnership Summary of Benefits

- Demonstrates commercial operation of 250 MW IGCC with 90% CO₂ capture, eliminating ~2 million tons of GHG emissions annually
- Reduces the pressure and need for natural gas with in-state, low-carbon base load power
- Increases energy security by boosting production from California's own oilfields
- Received CCS support in stimulus bill (CCPI-3 award from US DOE)
- HECA would provide a stimulus to Kern County, creating over 1500 construction jobs and over 100 permanent jobs during operations.

"(We) became increasingly convinced of the value of the HECA Project, and its environmental benefits to California ... it really is a win-win-win-win-win."
– President Michael Peevey, California PUC, Feb 20 2009

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