

alternativenergy



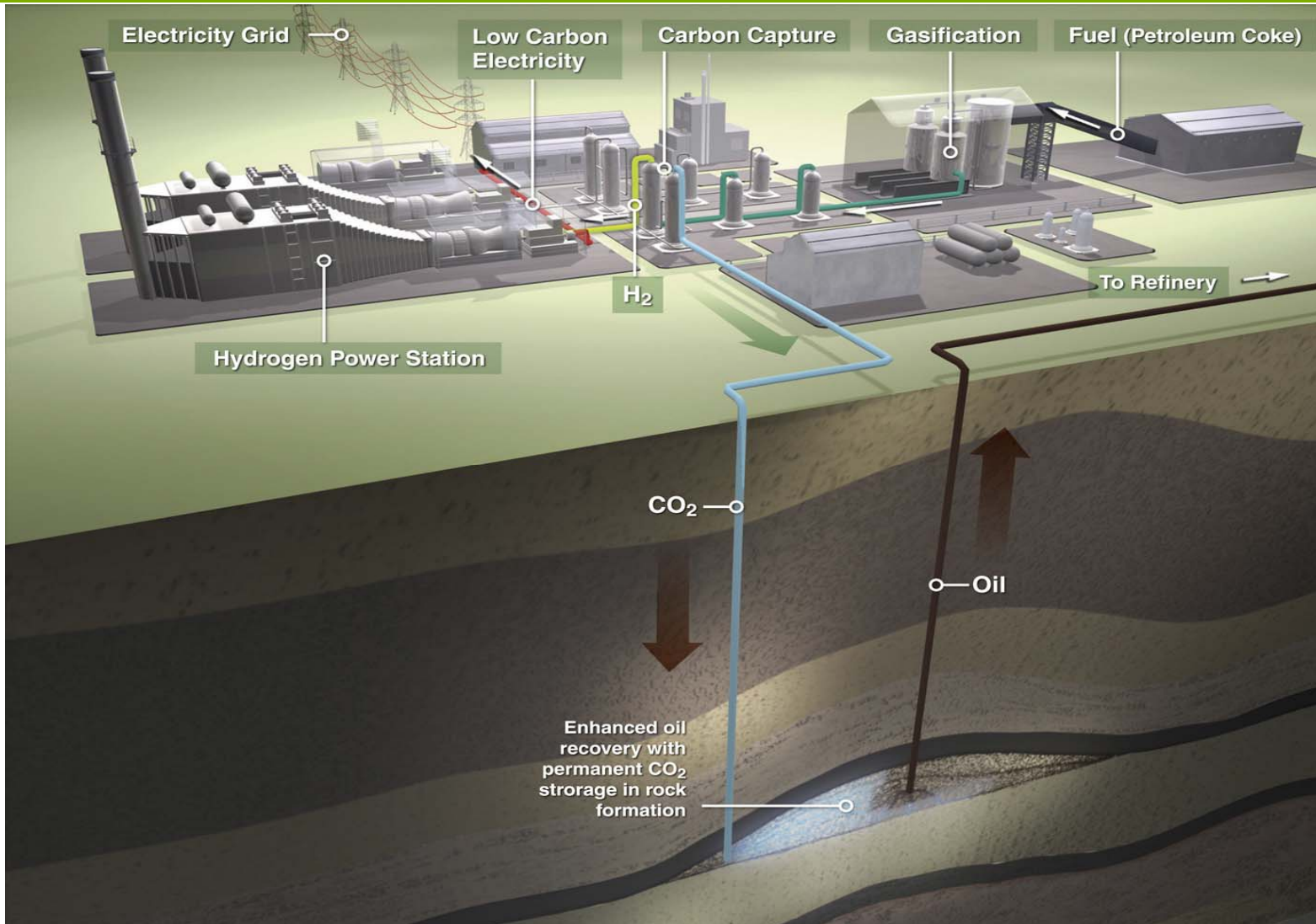
Carson Hydrogen Power

CCP2 NGO Focus Group

Washington, DC

December 4 - 5, 2006

Carson Hydrogen Power Plant



Carson Hydrogen Power

Sponsors and Key Participants



BP Alternative Energy

- Global leader in decarbonized fuels projects, including gasification projects and GHG sequestration

Edison Mission Energy

- Pioneer in first-of-kind IGCC (120 MW Cool Water and 528 MW ISAB in Italy)
- Leading developer of independent power (coal, gas, renewables)

Fluor

- One of the world's largest publicly-held EPC contractors
- Leader in the design of clean coal, carbon capture, power generation facilities

GE Energy

- Leading Provider of IGCC Technology and Equipment and Supporting Services

Occidental Petroleum

- World's largest CO2 EOR operator

URS

- Renowned leader in the permitting of IGCC power plants; Respected technical expertise and successful relationships with CEC, EPA and SCAQMD.

West Basin Water District

- Nationally recognized industrial water recycler



FLUOR



URS



CH₂P – an advantaged location

- Industrial zoning
- Coke disposition
- H₂ infrastructure
- Local CO₂ sequestration options
- Major Load Center



CoP

LADWP sub-station

SCE Sub-station

Rail Corridor

West Basin

Shell

Kinder

PRAXAIR

Valero

CoP-Carson

CH₂P
Air Prod.

BP Carson Refinery

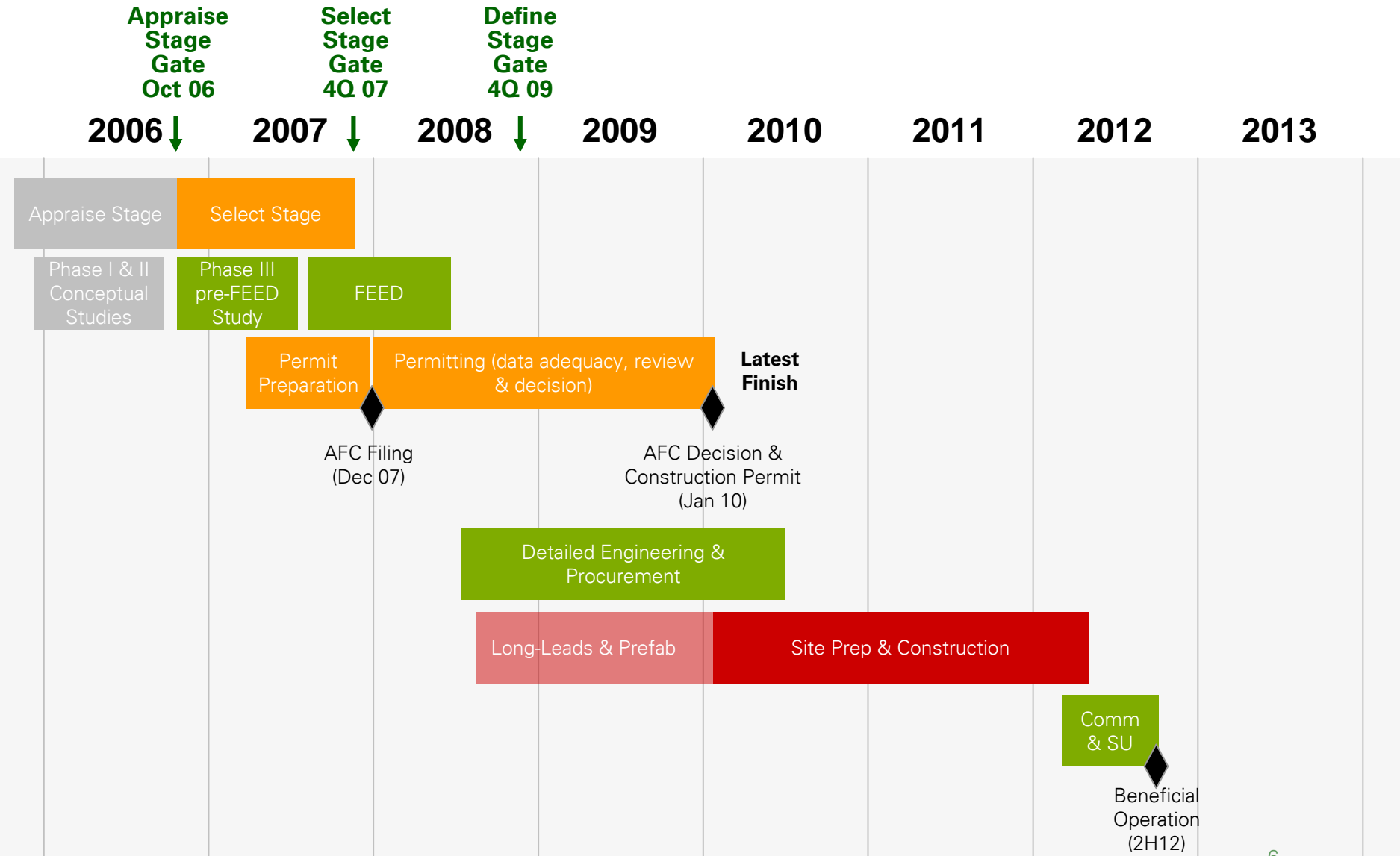
Captured CO₂ will enable enhanced oil recovery from California's mature oil fields

Figure 2. Major California Oil Basins



- Over 1 billion tonnes of CO₂ storage capacity available in local Californian oilfields and approx 57 billion barrels of 'stranded oil resource' (DOE 2005)
- 5-10% is technically recoverable via CO₂ enhanced oil recovery
- Technical studies are underway to determine which of Occidental's California oil fields are most attractive for CO₂ flooding technology
- Our studies include:
 - Feasibility of pipeline routes,
 - Tertiary recovery potential
 - Site characterization for sequestration
 - Evaluating monitoring techniques
- Current Focus on Wilmington Field; THUMS/Oxy Operator; Owned by State Lands commission

Carson Hydrogen Power (CH₂P) Summary Level Project Schedule



Policy & Communications – 2007 Priorities



- Political/Public/Community Outreach
 - Environmental Justice Concerns
 - Local e-NGO Outreach (Objections to Priority Reserve)
 - Public/Community Acceptance in Neighboring Area, along Pipeline route, and for THUMS EOR/CCS
- Permitting support for Power Plant, CO2 Pipeline, THUMS EOR
- Enabling Policy Framework for Low-Carbon Power Procurement
- Reasonable Policy Framework for CCS Siting, Monitoring, Measuring & Verification, Long-Term Liability
 - Public and Regulatory Acceptance that Sequestration can be Achieved during EOR Operations and long-term thereafter
- Acquire Emission Reduction Credits from SCAQMD (Offset Strategy, including mobile sources; terminal/ships, Priority Reserve, etc.)
- Working with State Lands Commission and City of Long Beach on acceptance and characterization of CO2 destination at THUMS
- Media Outreach and Response

CCS Framework Development



- CCS Policy Development (U.S. & California) – Ensure Reasonable Policy Framework for CCS Siting, Monitoring, Measuring & Verification, and Liability
 - AB1925 – Requires the CEC to provide policy recommendations to the California legislature by Nov 2007 “to accelerate the adoption of cost-effective geological sequestration strategies for the long-term management of industrial carbon dioxide”. (precedent-setting)
 - EPA Permitting Guidance for FutureGen and DOE Regional Partnerships
 - Formal federal CCS regulations will take several years and likely only as a result of U.S. Climate Change Legislation
 - SB 1368 and AB 32 implementation will ultimately set standards for proving sequestration to enable low-carbon power sales
 - Emerging risk: Public and Regulatory Acceptance that Sequestration can be Achieved during EOR Operations
 - Legislation pending for sequestration of non-electricity industrial CO₂
- Permitting for CO₂ Pipeline and THUMS EOR / CCS operation
- West Carb Phase III – Discussions with CHP

Environmental Permitting

- California Energy Commission has over-riding jurisdiction for permitting CH₂P – “one stop shop” and 14 month statutory schedule
- Permit will encompass South Coast Air Quality Management District – Most Stringent Air Standards in the US
- CH₂P will meet strict standards through a design that will encompass:
 - Start-up of plant to avoid sour syngas flare
 - AGR to achieve deep Sulfur compound removal
 - Deep NO_x removal to achieve natural gas BACT emissions
 - Recycling SRU tail-gas to eliminate venting
 - Enclosed petcoke handling & storage
 - ZLD on process wastewater
- CH₂P will create options for acquiring emission offsets, such as those offered by:
 - Avoided diesel emissions from petcoke trucking & export shipping
 - Ultra-Low GHG emissions

Back-Up

