

## About Hyperion

- Founded in 1990
- Headquarters in Dallas, Texas
- Family Owned and Operated
- Oil and gas company with domestic and international activities

*Hyperion believes the time is right to spearhead the environmentally-responsible development of an independent refining project that reduces dependence on foreign transportation fuels and benefits the local and state economies.*

### THE HYPERION TEAM

*The Hyperion Team has over 125 years of experience in the refining industry*

J.L. "Corky" Frank *Project Executive*

Former President of Marathon Ashland Petroleum, LLC

Preston V. Phillips *Project Executive*

Director of Business Development

Humberto Vaineri *Executive Advisor*

Former President and CEO of UOP

Carl D. Clay *Logistics*

Former President of Marathon Pipeline Co.

R. E. "Dick" White *Land Acquisition And Marketing*

Former Senior Vice President of Marketing for Marathon

### THE NEED

- The widening gap between demand for petroleum and domestic supplies is making us not just more dependent on foreign oil but on foreign transportation fuels as well
- The Hyperion Energy Center will enhance America's energy security
- The US is becoming more dependent on oil from politically unstable and/or unfriendly countries
- Aging Infrastructure
  - The average refinery in the US was originally sited and constructed over 50 years ago
  - The last new refinery was completed in 1976
  - The Hyperion Energy Center would be the cleanest and most efficient refinery ever built in the US

***Outsourcing America's ability to produce oil and refined products is not strategically or environmentally responsible for the United States***

# What is the HEC?

## OVERVIEW

- The Hyperion Energy Center is a state-of-the-art center for excellence in the production of clean transportation fuels. The flagship of the HEC is the refinery and associated IGCC plant

## REQUIRED PERMITS AND APPROVALS

- Government regulators at all levels have stringent rules and guidelines that must be followed
- The HEC will meet or exceed all regulatory mandates
- Before construction can begin, in addition to zoning the following permits are required to be obtained:
  - State Construction Storm Water Discharge Permit
  - State Wastewater Discharge Permit
  - State Water Rights Permit
  - State Prevention of Significant Deterioration (PSD Air Quality Permit)
  - State Section 106 National Historic Preservation Act (NHPA) Consultation
  - State and Federal Section 401 Water Quality Certification
  - Federal Section 404/10 Permit for Impacts on the Waters of the United States
  - Federal Section 7 Endangered Species Act (ESA) Consultation
  - Federal Aviation Administration (FAA) Obstruction and Lighting Clearance
  - (Together with any other permits and approvals required by state and federal law)

## RAISING THE BAR FOR THE INDUSTRY

- The proposed HEC refinery and power plant will rank among the cleanest and most environmentally friendly in the world
- The facility will incorporate Best Available Control Technology (BACT) including:
  - Process gas compressor systems reducing flaring to emergencies only
  - Ultra-low-NO<sub>x</sub> burners in all process heaters to minimize NO<sub>x</sub> formation
  - Highly efficient heat exchange equipment
  - Amine scrubbing to remove sulfur from fuel gases prior to combustion
  - No fluidized catalytic cracking unit (which is the highest-emitting unit in nearly all refineries)
  - Internal floating roofs on tanks to minimize evaporation and subsequent emissions to the atmosphere
  - Seal-less piping components
  - Enclosure of petroleum coke storage piles to prevent windblown dust
  - Fundamental decision to use IGCC technology for the power plant
  - Selective catalytic reduction (SCR) technology for reducing NO<sub>x</sub> emissions
  - Vapor recovery equipment
  - Fabric Filter baghouses to minimize particulate matter emissions
- The symbiotic nature of the facility sets a model for industrial development as it minimizes the need for transportation, supporting infrastructure and resources

# What is a refinery?

## OVERVIEW

- The primary purpose of an oil refinery is to separate and reconstruct the varying hydrocarbon chains contained in crude oil into usable products such as gasoline, diesel and aviation fuel
- Three major processes transform crude oil into petroleum products:

### 1. Distillation

The first step in the refining process is to separate the different hydrocarbon chains that comprise crude oil. Because hydrocarbons vaporize at different temperatures, crude oil is heated to over 700 degrees Fahrenheit and then is sent to a distillation tower. The temperature decrease as the vapors rise through the tower and the components of the crude oil condense at different heights

### 2. Conversion

A modern, complex, full conversion refinery takes the heavy unfinished products from the crude distillation unit and turns them into higher value products such as gasoline and diesel fuel. This is the function of the hydrocracking unit and delayed coker which essentially reduce the length of long hydrocarbon carbon chains

### 3. Purification

Once crude oil has gone through the distillation unit and conversion units, natural impurities must still be removed from the petroleum products. Impurities are removed so that when these fuels are consumed they will burn cleaner. Sulfur is a constituent in most crude oil and it must be removed to produce clean fuels such as ultra-low sulfur gasoline and ultra-low sulfur diesel. This is done by hydrotreating

## WHAT THE HEC PRODUCES

- The HEC is designed to produce the maximum amount of transportation fuels
- 400,000 barrels of crude oil per day becomes:
  - 190,000 bpd ultra low sulfur gasoline
  - 160,000 bpd ultra low sulfur diesel
  - 40,000 bpd of ultra low sulfur aviation fuel
  - Petroleum coke which will be consumed by the IGCC plant to create hydrogen, steam and power for the refinery



- 10% JET FUEL
- 49% GASOLINE
- 41% DIESEL

## HEALTH AND SAFETY

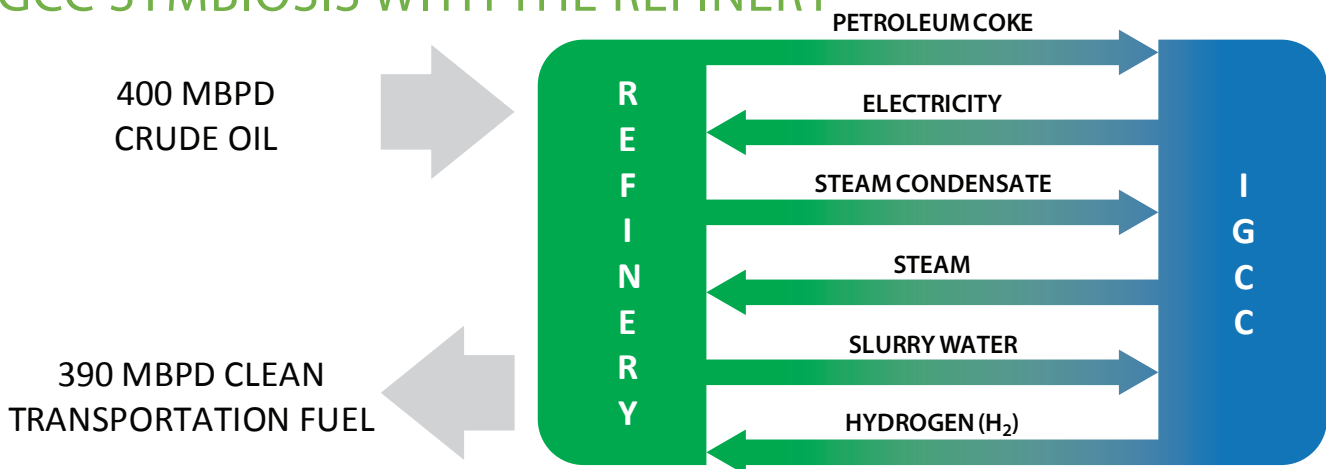
- Hyperion is committed to the health and safety of our employees, contractors, and the communities in which we operate. Key components of our plan to continually meet our health and safety goals include:
  - **Emergency Response Preparedness** – Hyperion Energy Center will maintain a dedicated, on-site 24-hour a day fire and emergency response staff during operations and construction
  - **Management Systems** – We will develop and implement a comprehensive Health and Safety Management System that will apply to all activities conducted at the Hyperion Energy Center

# What is IGCC?

## OVERVIEW

- An integrated Gasification Combined Cycle, or IGCC, is a power plant that uses synthetic gas produced from petroleum coke to produce electricity and steam
- In the HEC, a large portion of the synthetic gas is used to produce hydrogen for the refinery
- IGCC is the cleanest power generation technology when compared to other power technologies that consume solid fossil fuels. Compared to other traditional technologies IGCC:
  - Has significantly lower emissions,
  - Can more economically capture carbon dioxide
  - Requires 20%-30% less water
- The IGCC also curbs the emissions associated with transportation. All petcoke will be consumed on site instead of being marketed to domestic or international consumers.

## IGCC SYMBIOSIS WITH THE REFINERY



- Incorporating the IGCC with the refinery makes the entire facility more efficient. Hyperion will make high value products and no asphalt, bunker oil or heavy oils as a traditional refinery would

## BENEFITS OF THE IGCC TO THE HEC

- The IGCC replaces the need for the refinery to use 200 MW of electricity off the grid
- It replaces the need for an energy intensive steam-methane reformer unit, which consumes significant amounts of natural gas
- It eliminates the need to ship petcoke offsite via rail or truck
- The IGCC facility is Carbon Capture Ready for over 90% of the Carbon Dioxide from the gasification process
- Allows for precombustion removal of many contaminants to reduce emissions

## Environment

### STORM WATER

- The Hyperion Energy Center will capture all process wastewater and stormwater runoff that has the potential to come into contact with petroleum products
- Captured water will be routed to an on-site treatment plant and used to supplement the facility. The plant will treat the water to acceptable standards and will supplement the refinery feed water
- The discharged treated water from the facility will be in accordance with a permit from the state

### EMERGENCY FLARE

- Flaring will not be used except for only the most extreme emergencies unlike typical refineries. The typical aging refinery in the United States flares hydrocarbons on a continuous basis

### ODOR

- Hyperion's design objective is to have no detectable smell at the boundary of the HEC property
- Modeled concentrations at the projected HEC property line are below geometric mean detection threshold values as reported by the American Industrial Hygiene Association
- HEC will be completely new and designed using technology to reduce vapor leaks that lead to odor

### CULTURAL AND HISTORICAL

- Hyperion has initiated steps to protect the integrity of the county:
  - Consulting with local and state archaeological and historical preservation groups
  - Completing a cultural and archaeological survey

### BIOLOGICAL

- No biologically unique landscapes or sensitive habitats have been identified in the vicinity of the HEC
- Additionally, the recreation area will support a host of species which will enhance the local ecosystem

### NOISE

- Outside of the HEC limits, the noise will not be greater than 65dba, the U.S. Department of Housing and Urban Development limitation for external noise in a residential area
- The HEC will not create a disturbance greater than the normal peak hour on nearby I-29 and State Highways 11 and 50

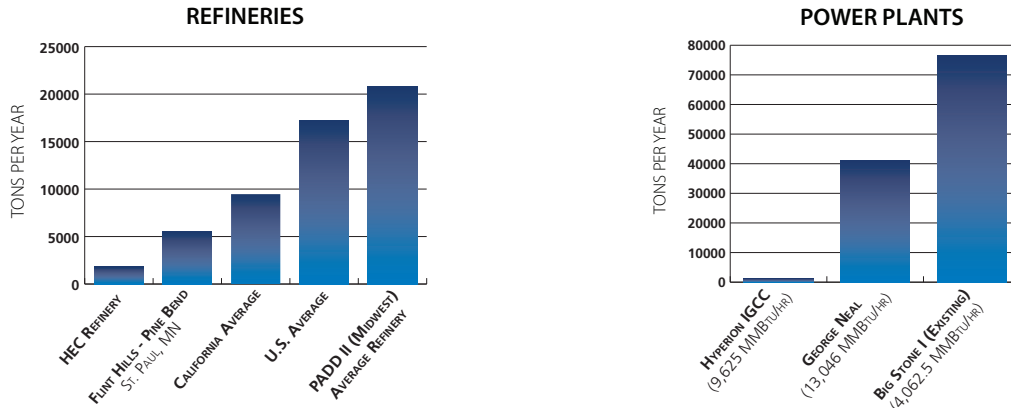
### LIGHTING

- The HEC will incorporate innovative lighting strategies and technology to minimize the visual impact of facility lighting on the surrounding areas including full cutoff lighting fixtures and variable lighting levels

# Environment: Air

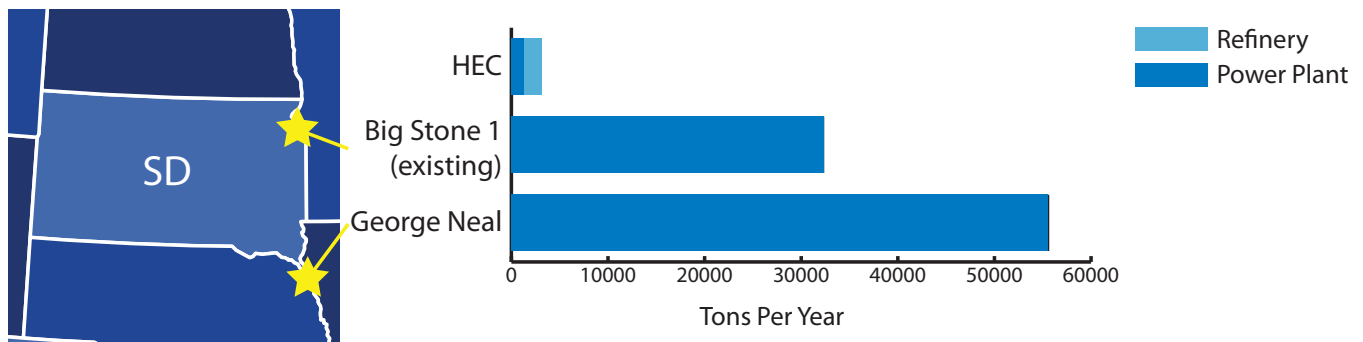
## REFINERY & IGCC POWER PLANT

- The refinery normalized emissions will be 80% lower than the average operating refinery in California
- The IGCC power plant normalized emissions will be approximately 1/30th of the emissions of George Neal power plant in Port Neal, Iowa and 1/60th of the existing Big Stone Power Plant near Milbank, South Dakota



## REGIONAL ACTUAL EMISSIONS COMPARISON

- The HEC's combined actual emissions will be significantly lower than existing regional power plants



## CO<sub>2</sub>

- The IGCC is designed to be Carbon Capture Ready for over 90% of the carbon dioxide from gasification
- Canadian crude will be refined somewhere in the world and it should be at a facility that is carbon capture ready and will meet stringent air emissions and water quality standards. North American oil should not be refined in countries with low or non-existent environmental standards and irresponsible CO<sub>2</sub> foresight

## AIR PERMIT

- The HEC will require an air permit prior to construction which is implemented by the SD DENR and oversighted by the EPA. Public participation, including a public hearing, is part of the process
- Hyperion intends to file for an air permit shortly and will post the application online for public review

# Environment: Water

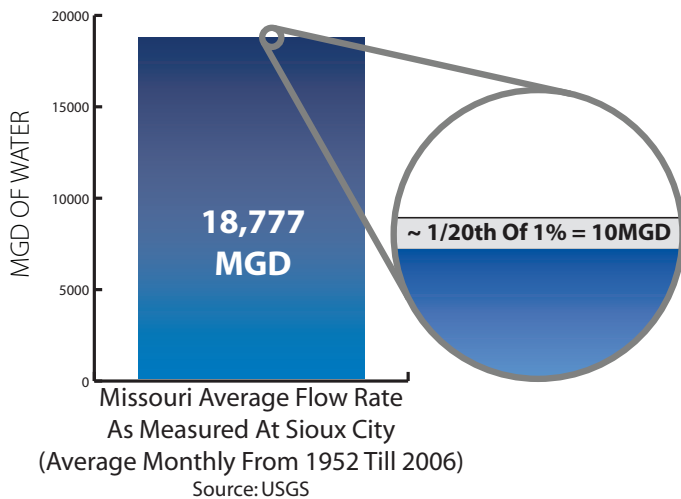
## OVERVIEW

- Contingent upon SD DENR approval, the HEC's primary source of water will be groundwater from shallow wells near the Missouri River. The wells would likely draw from the Missouri Aquifer, the same aquifer used by the nearby Lewis & Clark Regional Water System. This aquifer is recharged by the Missouri River.
- Additionally, Hyperion intends to capture storm water runoff to the greatest extent practical, in order to supplement facility feed water, thus reducing the amount drawn from the intake source.
- Water use is regulated by the SD DENR's water management board. The HEC will require a water rights permit. The permit application process involves a thorough review of the project.

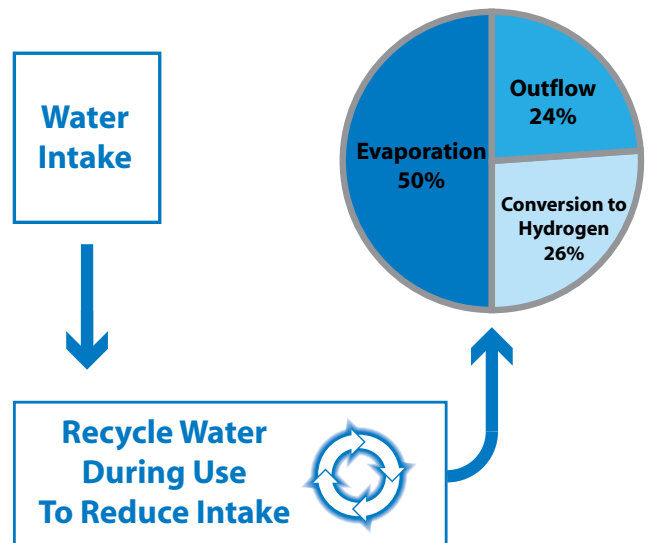
## THE NUMBERS

- The HEC water use is about 8 - 12 MGD, approximately 1/20th of 1% of the average Missouri River flow rate

**WATER INTAKE AS A PERCENTAGE OF THE AVERAGE MISSOURI RIVER FLOW RATE**



**WATER USE CYCLE AT THE HEC**



## RECREATION AREA

- Hyperion has land along the Missouri River about 4 miles from Elk Point where it intends to create a recreation area
  - At least 500 acres in total area
  - Publicly accessible
  - Water fowl habitat
  - Wildlife area



# Economic Impact

## NEW INVESTMENT

- \$13.7 Billion Annual Economic Activity
- \$1.2 Billion In New Wealth Annually
- \$66.2 Million In State Sales Tax Annually
- \$2.0 Billion In New Property Tax Base
- \$20.4 Million For Schools Annually
- \$8.4 Million for County Annually

## EMPLOYMENT

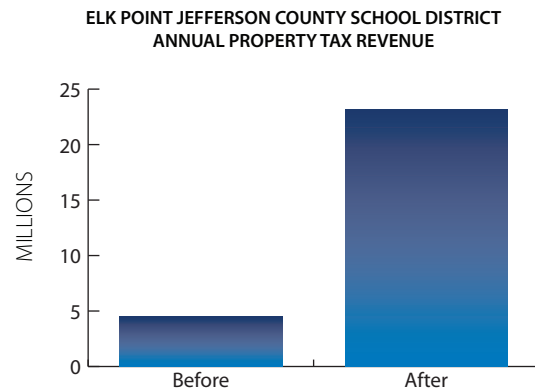
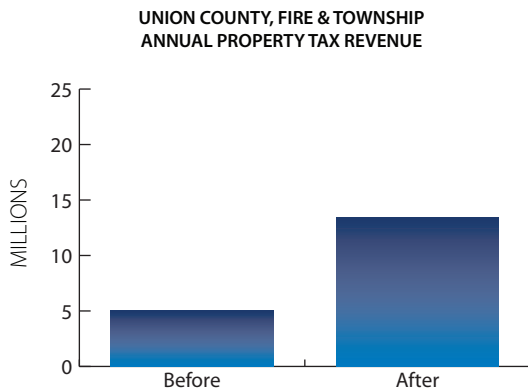
- 1,826 permanent jobs
- 4,500 construction jobs on average for 48 months

## SCHOOL DISTRICT

\$20 million to \$30 million in school taxes to support the Elk Point Jefferson County School District  
 An additional \$4 million in school revenue from new residential property taxes

## COUNTY, TOWNSHIPS, FIRE DISTRICT

\$8.4 million in additional property tax revenue annually



## ADVANCED EDUCATIONAL OPPORTUNITIES

- Technical training programs for advanced trades and skills
- Regional center of excellence for economic and academic opportunities
- Possible research and development initiatives with South Dakota Universities and Technical Colleges

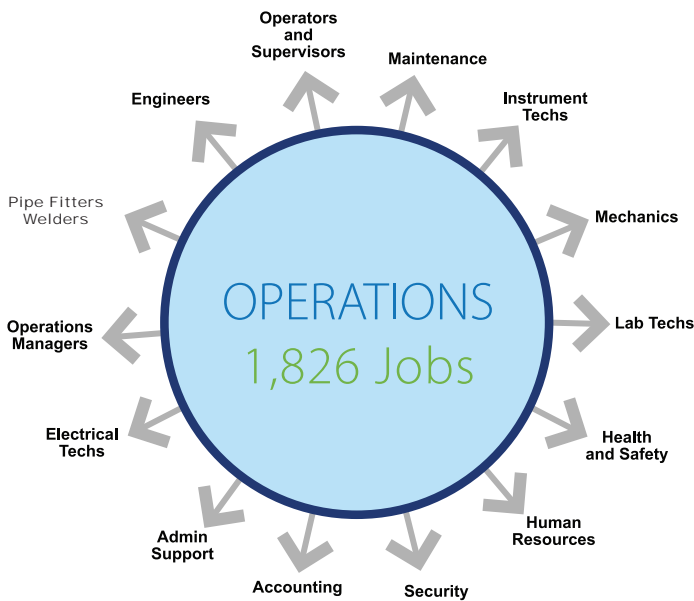
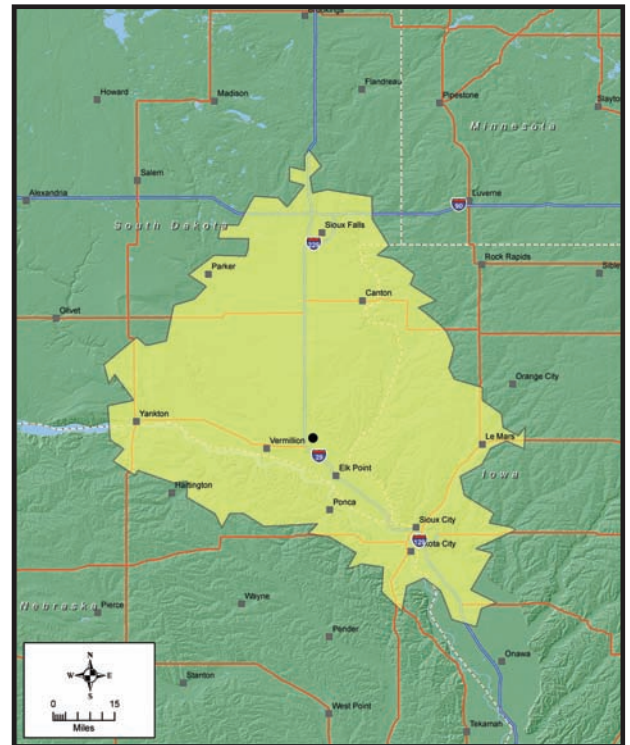


# Workforce and Logistics

## EMPLOYMENT

- During construction and operations Hyperion will employ local people to the maximum extent possible
- It is expected that the majority of these jobs will be performed by people living within one hour's drive to the facility as shown on the map to the right
- Jobs will have industry competitive corporate benefits
  - Medical, dental and vision coverage
  - 401k and long-term job stability
  - Job training, family internships and continuing education opportunities

## 1 HOUR DRIVE TIME ANALYSIS



## CONSTRUCTION TRANSPORTATION

- A new rail spur will be required to connect the facility to major railroads. At this time, several possible routes are being explored
- All loads will be trucked or railed to the site
- Approximately 100 truck deliveries per day and two trains per week
- All truck deliveries will be routed via I-29 to SD 50 or SD 48 and then via county and township roads which will be upgraded

## OPERATIONS TRANSPORTATION

- Approximately 50 trucks and one train per day
- Hyperion will continue to work with state and local authorities to ensure a stable and well maintained road system