

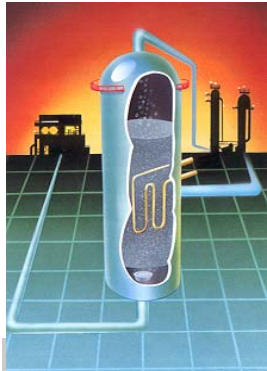
# A TRANSPORTATION FUEL STRATEGY FOR THE U.S.



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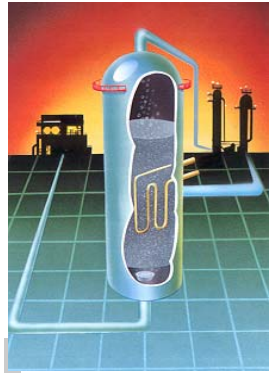
THE ONLY RISK WITH AN  
ALTERNATIVE FUEL TRANSPORTATION /  
ENERGY PROGRAM  
IS

**THINKING IT WILL  
SOLVE ITSELF!**



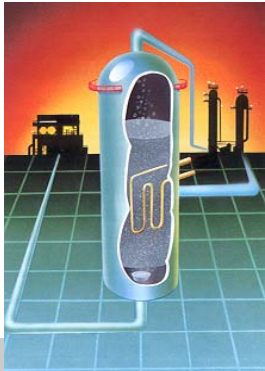
# F-T DIESEL FUEL TECHNOLOGY IS PROVEN BUT IS IT ECONOMIC ?

- ◆ Over 40 billion gallons of F-T fuels sold to date from BTL CTL and GTL plants around the world –  
**It is proven !**
- ◆ Over 500,000 bbl/d of new GTL plants under construction or planned for Middle East alone –  
**it is commercial !**
- ◆ No new refinery (crude oil or alternative fuel) built in the U.S. can recover its Capex if it has to sell its “new fuel” at the same price as “old fuel”. **New refineries will need an economic boost to compete !**



# **THERE ARE AT LEAST THREE ECONOMIC DRIVERS THAT CAN SUPPORT A U.S. ALTERNATIVE FUEL PROGRAM**

- ◆ Strategic – Reducing US Energy Imports  
(National Energy Policy)
- ◆ Increasing US Refining Capacity + CAFÉ Levels  
(more fuel availability & better fuel mileage)
- ◆ Environmental - Lower Emissions  
(Clean Cities Programs - lower GHG emissions)



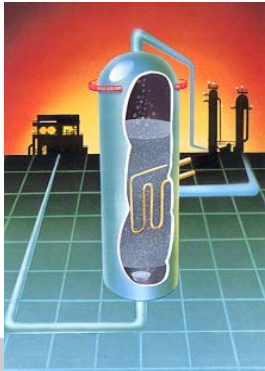
# HOW MUCH DOES THE US ENERGY POLICY COST THE AMERICAN ECONOMY ?

The DOE has said to maintain a military presence in the Middle East can cost the US consumer:

◆ 50¢/gallon ~ \$92 billion/yr (Security Premium\*\*)

## NEBULOUS MONEY

\*\*The National Defense Council Foundation has performed a very detailed study of the “Cost of Imported Oil” including other factors not considered here showing that this Security Premium could approach \$2.00/gallon<sub>4</sub>

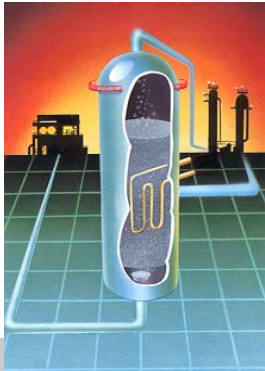


# HOW MUCH DOES THE US ENERGY POLICY COST THE AMERICAN ECONOMY ?

It is estimated that the lack of US Refining capacity, approximately 3 million bbl/d, costs the US consumer ~ 25¢/gallon for 3 months  
(refining capacity penalty)

◆ 25¢/gallon ~ \$11 billion/yr

## REAL MONEY

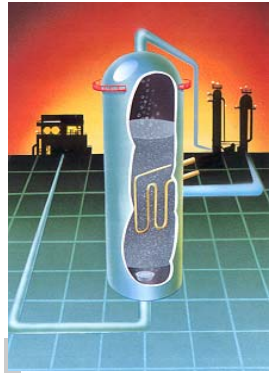


# HOW MUCH DOES THE US ENERGY POLICY COST THE AMERICAN ECONOMY ?

It is estimated that by transitioning light duty trucks and passenger cars from gasoline to “new” diesel over a 20 year period the American Consumer could save 1.4 million bbl/d of fuel  
(Engine/Energy Efficiency):

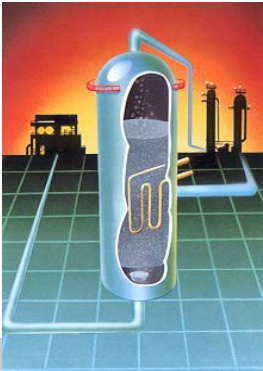
- ◆ approximately \$35 billion/yr in fuel savings

## **FUTURE MONEY**



# LETS SUMMARIZE THESE PROCEEDING THREE POINTS

- ◆ Middle East Security Premium - \$90 + Billion/yr
  - (Nebulous Money - hard to see but you know its big)
- ◆ Refining Capacity Penalty - \$11 billion/yr
  - (Real Money – out of pocket costs each summer)
- ◆ Engine/Energy Efficiency - \$35 billion/yr
  - (Future Money – use less fuel save money)



# **HOW MUCH NEW PRODUCTION/REFINING CAPACITY DO WE NEED TO ADD EACH YEAR TO REDUCE US DEPENDENCE ON IMPORTS BY 6 MILLION BBL/D IN 20 YEARS?**

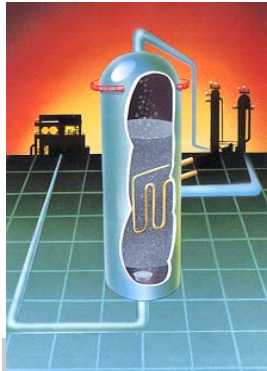
**375,000 BARRELS PER DAY ADDED EACH OF 16 YEARS**

## **◆ Actual Refining Capacity**

**– 288,000 bbl/d (beginning in year 5)**

## **◆ Fuel Savings switching from gasoline to diesel**

**– 87,000 bbl/d (fuel savings at 30% better mileage)**



# HOW MUCH WILL NEW REFINING CAPACITY COST?

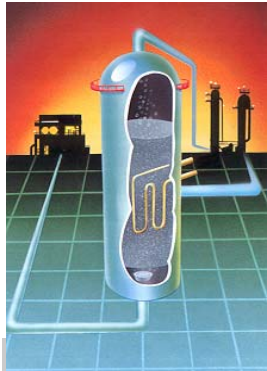
Although no new refineries have been built in the US since 1972 - cost in \$/installed barrel (\$/bbl)

- ◆ Oil Companies \*\*say \$28,000 / bbl (100,000 bbl/d crude oil refinery - \$2.8 billion)
  - 28¢/gallon\*
- ◆ Sasol says \$16 to \$22,000 / bbl (33,000 bbl/d gas to liquids refinery \$726 million or \$2.2 billion for 100,000 bbl/d )
  - 23¢/gallon\*
- ◆ Sasol says \$60,000 / bbl (75,000 bbl/d coal to liquids refinery \$4.5 billion or \$6 billion for 100,000 bbl/d )
  - 61¢/gallon\*
- ◆ Choren says \$85,000 / bbl (6,500 bbl/d bio-mass to liquids refinery – \$520 million or \$8.5 billion for 100,000 bbl/d)
  - 82¢/gallon\*

\*(ADDITIONAL COST PER GALLON TO RECOVER THE CAPEX AT 8% INTEREST OVER 10 YEARS)

\*\* ASSUMES THAT A CRUDE OIL REFINERY WILL HAVE TO PRODUCE ULTRA CLEAN FUELS

**NOTE: SIZE OF THE REFINERY DOES MATTER – bigger is better**

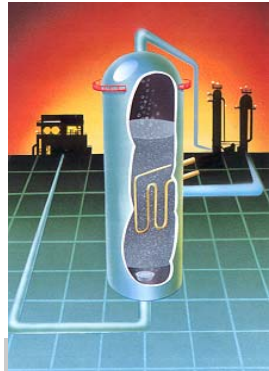


# HOW MUCH NEW REFINING CAPACITY CAN WE GET FOR ONLY \$25 BILLION/YR?

(less than 20% of Middle East Military Presence and lack of refining capacity)

- ◆ **Crude Oil** (US Coast Line – Imported Crude)
  - 1,660,000 bbl/d
  - (doesn't help reduce US reduce imports of crude oil so why do it)
- ◆ **CTL** – (Western US - Alaska to Ohio)
  - 555,000 bbl/d
- ◆ **Choren BTL** (Western/Central US Crops)
  - 384,000 bbl/d

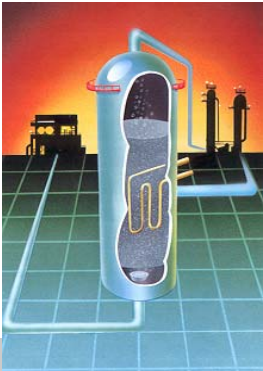




# So WHY NOT BUILD NEW US CRUDE OIL REFINING CAPACITY ?

A US Crude Oil Refinery costs less than a  
US BTL / CTL Refinery **or DOES IT !**

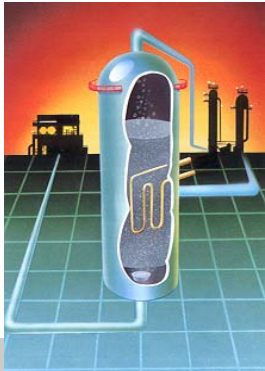
- ◆ US Crude Oil Refinery (100,000 bbl/d crude)
  - CAPEX Recovery 28¢/gallon WITH Middle East Presence + 50¢/gallon = **78¢/gal**
  - Still imports crude oil @ \$35/bbl - \$1.3 billion/yr
  
- ◆ Sasol CTL (50,000 bbl/d – 6.5 million ton/yr coal)
  - CAPEX Recovery 61¢/gal NO Middle East Presence 0¢/gal = **61¢/gal**
  - Domestic resource \$90 - \$125 million/yr – imports \$0
  
- ◆ Choren BTL (6,500 bbl/d 1 million ton/yr bio-renewable)
  - CAPEX Recovery 82¢/gal NO Middle East Presence 0¢/gal = **82¢/gal**
  - Domestic resource \$40 million/yr – imports \$0



# HOW DO WE PROPOSE TO PAY FOR THIS NEW BTL CTL SYN-GAS REFINING CAPACITY?

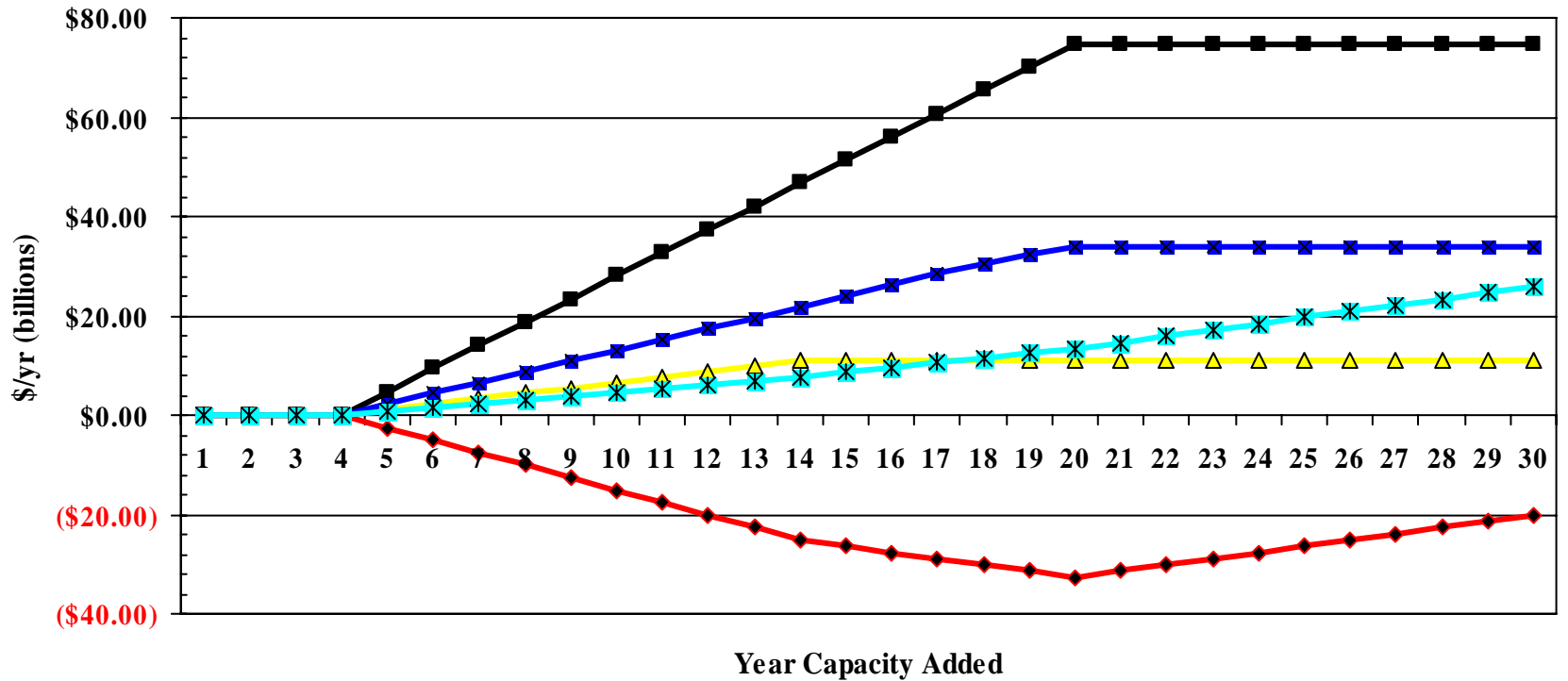
A Syn-Fuels Energy Credit Similar to Ethanol, CNG, LPG, LNG & the newly approved Biodiesel Tax Credit Program:

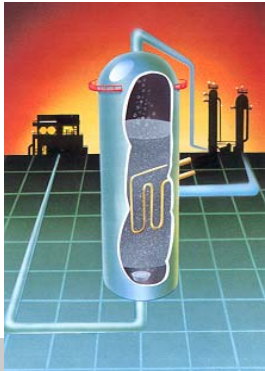
- ◆ BTL (bio-renewable to F-T diesel) “trees/crops”
  - 1 ¢/gal per % of blending
- ◆ CTL (bio-mass to F-T diesel) “coal”
  - 1/2 ¢/gal per % of blending
- ◆ SYN-GAS (bio-renewable bio-mass)
  - \$1/mscf (thousand standard cubic feet) “trees/crops”
- ◆ **An Energy Credit Allows Anyone To Build New Refining Capacity**



# HOW DO YOU REALLY COMPARE THE COSTS AND SAVINGS TO THE AMERICAN ECONOMY?

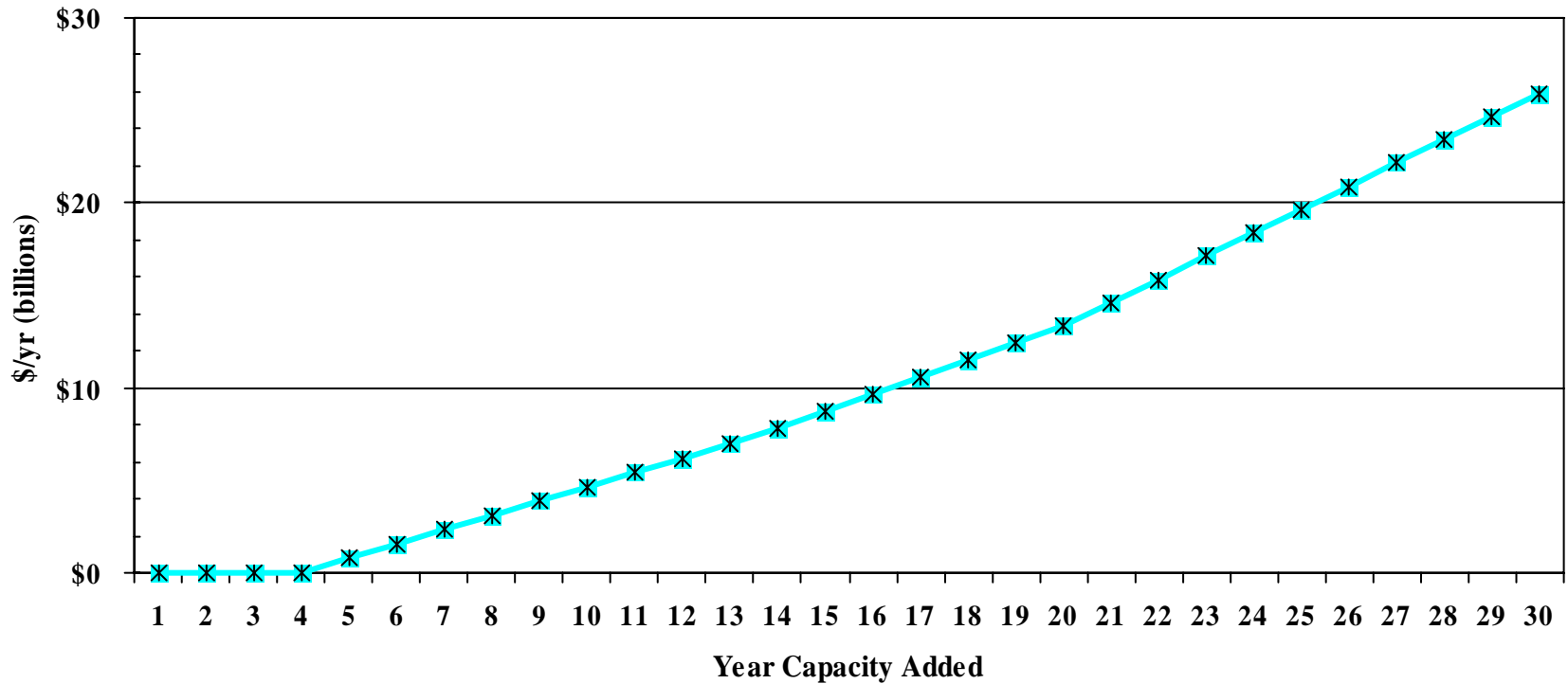
Alternative Transportation Fuel (Costs) Savings \$/yr



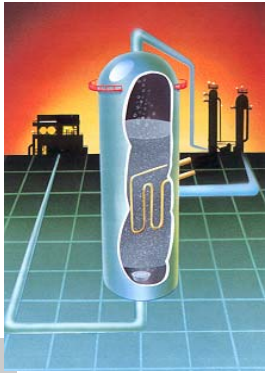


# HOW DO YOU REALLY COMPARE THE COSTS AND SAVINGS TO THE AMERICAN ECONOMY?

Alternative Transportation Fuel Savings \$/yr

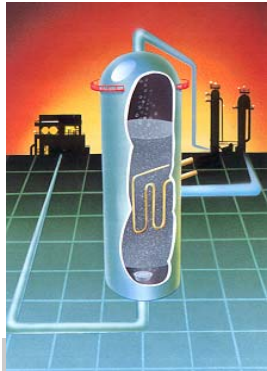


—\*— Projected Savings of Alt Fuel to US economy



# POINTS TO REMEMBER

- ◆ 6 Million bbl/d – 92 Billion gal/yr (50% of today's transport fuel)
- ◆ \$75 Billion/yr in crude oil savings @ \$35/bbl
- ◆ \$35 Billion/yr in savings on gasoline purchases @ \$1.64/gal
- ◆ \$130 Billion in CAPEX for BTL/CTL Plants across the US
- ◆ \$10 Billion/yr in bio-mass and coal purchases
- ◆ \$50 million investment in engine technology over 4 years
- ◆ Hundreds of Thousands of American's Employed
- ◆ 50% or more of US Energy Domestically Produced
- ◆ What if imported oil really does cost the US \$2/gal more !



# ONE ADDITIONAL THOUGHT

**THIS IS A U.S. ALTERNATIVE  
TRANSPORTATION FUEL & ENERGY  
PROGRAM THAT CAN  
NOT BE OUTSOURCED TO INDIA**