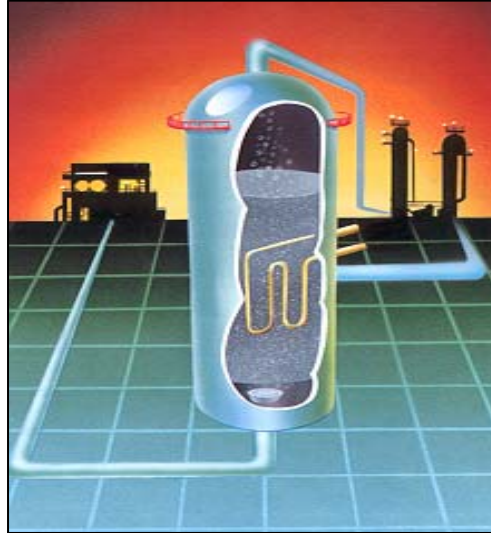


**WESTERN GOVERNORS ASSOCIATION
JUNE 14, 2005 ENERGY POLICY RESOLUTION 05-06
ANGTL RESPONDS WITH THE IGFCC PROPOSAL**



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APPENDIX III

F-T TRANSPORT FUELS AND ELECTRIC POWER

The US is importing approximately 12 million barrels of crude oil and crude based products every day. In addition the US lacks approximately 3 million barrels per day of domestic refining capacity.

3 million barrels per day of additional refining capacity from Western Coal:

The US West with its vast resource base of coal and bio-mass can reduce these numbers significantly. For every 1 ton of western coal, approximately 1.7 barrels of F-T transport fuels can be made. Assuming that we want to increase US refining capacity by 3 million barrels per day, we would need an additional 1.7 million tons per day of coal or approximately 640 million tons per year, a 60% increase in existing US coal production. Given that it will take about 20 years to build this many coal to liquids plants, this is not an unrealistic goal according to two of the US largest coal producers.

640 million tons per year of incremental coal production from the Western States:

The modern F-T plant produces an enormous amount of waste heat, nearly sixty percent of the BTU's contained in the coal feed stock is available for capture. The typical F-T plant can use between 18% to 22% of this waste heat to supply its own energy needs. This still leaves 35% or more of the initial BTU's contained in the coal feed stock. Assuming that you can capture 10% to 15% of this available waste heat the F-T plant can supply 300 mw or more of additional electric power to the local grid.

As an example an 80,000 bbl/d CTL plant will require approximately 45,000 tons per day of a sub-bituminous coal containing approximately 7,400 BTU/lb. Assuming a modern steam generation plant requiring 9,500 BTU/kw-hr and only 15% of the F-T waste heat can be utilized:

$$45,000 \text{ ton/day} \times 2,000 \text{ lb/ton} \times 7,400 \text{ BTU/lb} = 666 \text{ billion BTU/day}$$

$$666 \text{ billion BTU/day} = 27 \text{ billion BTU/HR}$$

$$27 \text{ billion BTU/hr} \times 10\% = 4.2 \text{ billion BTU/HR}$$

$$4.2 \text{ billion BTU/HR} / 9,500 \text{ BTU/kw-hr} = 440 \text{ MW-HR of waste heat power.}$$

3 million bbl/d of F-T plants would produce 16,000 MW-HR of electric power from waste heat only. Syn-Gas from the F-T recycle system could easily double this number

30,000 MW of new electric generation capacity from Western States coal and bio-mass