

DRAFT 5/07

BIOFUELS AND THE BAY

A REPORT OF
THE CHESAPEAKE BAY
COMMISSION

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INTRODUCTION AND BACKGROUND

- 2007 STATE OF THE UNION – GOAL OF 35 B GALLONS OF BIOFUEL BY 2017.
- 2005 CONGRESSIONAL GOAL OF 7½ B GALLONS BY 2012 – WILL BE MET IN 2007.
- 35 B GALS. IS 20% OF TRANSPORTATION NEEDS
- POTENTIAL EST. 50-100 B GALLONS PER YEAR.
- CORN-BASED ETHANOL IS THE SOURCE OF NEARLY ALL CURRENT US BIOFUEL PRODUCTION.
- PEAK CAPACITY FOR CORN-BASED ETHANOL PRODUCTION ESTIMATED AT 12-14 B GALS PER YEAR (LAND-LIMITED).

BIOFUELS AND FORCES IN THE BAY REGION

- BAY REGION FARMS ARE CLOSE TO MARKETS FOR FOOD AND BIOFUELS.
- PRICE OF CORN HAS DOUBLED SINCE SEPTEMBER.
- BAY REGION FARMS DEPEND ON GRAIN-FED POULTRY AND LIVESTOCK FOR PROFITABILITY.
- MOST GRAIN FOR ANIMAL FEED IS ALREADY FROM OUTSIDE THE REGION AND PRICES ARE SET NATIONALLY AND EVEN INTERNATIONALLY.
- THIS IS THE CORN-GROWING REGION OF THE US WITH THE LEAST INVESTMENT IN CORN-BASED ETHANOL – 140 REFINERIES, 0 IN THE REGION (ALTHO ABOUT TO CHANGE).
- UP TO 1 M NEW ACRES OF CORN IN REGION IN NEXT FEW YEARS, WITH UP TO 15M NEW LBS. OF NITROGEN LOADINGS TO THE BAY, LOSING 25% OF WHAT WAS REDUCED SINCE 1985, UNLESS CONSERVATION MEASURES.

BIOFUELS AND FORCES IN THE BAY REGION - II

- CORN INCREASES LIKELY SHORT-LIVED, AS CORN IS REPLACED BY CELLULOSIC SOURCES.
 - CORN STOVER ISSUES RELATE TO AMOUNT RETAINED FOR CONSERVATION PURPOSES.
 - FORESTRY SLASH COULD BECOME A BIG SOURCE.
 - SWITCHGRASS HAS MULTI-YEAR START UP TIME.
- CORN ACRES COULD GO TO SOYBEANS AFTER 2012-2015 FOR BIODIESEL FEEDSTOCK, OR TO SWITCHGRASS, OR COULD STAY IN CORN FOR STOVER OR OTHER REASONS.

GRAIN-BASED ETHANOL

- NEARLY ALL CORN, ALSO HULL-LESS BARLEY
- 14% OF 2005-6 CORN CROP AND 20% OF 2007 GOING TO ETHANOL PRODUCTION NATIONWIDE
- ESTIMATED 10-12 M ADDITIONAL ACRES OF CORN THIS YEAR NATIONWIDE, UP TO 1M IN CHESAPEAKE REGION
- INCREASED USE OF COMMERCIAL FERTILIZER, RELATIVELY POOR UPTAKE BY CORN, CONDITION OF NEW ACRES, LOSS OF CRP LANDS ARE ALL OF CONCERN FOR NUTRIENT LOADINGS TO THE BAY
- BENEFITS INCLUDE MORE VIABLE FARMING, PRESERVATION OF FARMLANDS FROM DEVELOPMENT, AND OPPORTUNITY TO EXPAND COVER CROPS AND OTHER BMP'S.

CELLULOSE-BASED ETHANOL

- FEWER PROBLEMS, MORE POTENTIAL THAN CORN
- MORE NET ENERGY THAN CORN - 6-8X PER ACRE
- TECHNOLOGY NOT YET DEVELOPED (est. 5-8 yrs.)
- MAJOR POTENTIAL SOURCES:
 - CORN STOVER – VALUABLE LEFT ON THE LAND
 - FOREST SLASH – VAST AMOUNTS IN REGION
 - PERENNIAL GRASSES, e.g. SWITCHGRASS – 3 YEARS TO ESTABLISH
 - FOCUS OF FARM BILL INITIATIVES

BIODIESEL

- US PRODUCTION A FEW HUNDRED M GALLONS IN 2006, COMPARED TO 5 B GALLONS OF ETHANOL
- WIDELY USED IN EUROPE, WHICH HAS DEVELOPED NEW GENERATION OF DIESELS; US HAS STRONGER CONTROLS ON PARTICULATES
- MAJOR SOURCE IN US IS SOYBEANS; CORN LIKELY TO DISPLACE SOME SOYBEAN ACRES; MOVE TO CELLULOSIC ETHANOL COULD BRING ACRES BACK
- WIDE RANGE OF SOURCES BEYOND SOYBEANS, INCLUDING OILS FROM OVERSEAS, CHICKEN FAT AND ALGAE FROM SEWAGE TREATMENT PLANTS

COMBUSTION AND GASIFICATION

- FOCUS IS ON FARM-BASED SYSTEMS USING WASTE PRODUCTS LIKE POULTRY LITTER
- COMBUSTION GENERATES HEAT OR ELECTRICITY FOR POULTRY HOUSES OR OTHER FARM USES
- CO-GENERATION WITH COAL AN OPTION, BUT OPPOSED ON AIR POLLUTION GROUNDS
- METHANE CAPTURE AND CONVERSION ANOTHER OPTION.
- ADVANCED SYSTEMS USE PYROLYSIS TO CREATE BIO-OILS OR GAS
- OPTIONS AT EXPERIMENTAL STAGE AND ALL HAVE AIR QUALITY ISSUES

DEVELOPING A “BEST STRATEGY” FOR BIOFUELS AND THE BAY

- THREE-PART GOAL:
 - NEW INCOME SOURCES FOR FARMERS & FORESTERS
 - NEW WAYS FOR BIOFUELS TO SUPPORT BAY AND RIVER RESTORATION
 - ELIMINATE OR MINIMIZE CONFLICT OF THE ABOVE TWO
- MAJOR ACTORS:
 - INDIVIDUAL FARMERS, FORESTERS AND INVESTORS
 - MARKET FORCES
 - GOVERNMENT INCENTIVES AND REQUIREMENTS

DEVELOPING A “BEST STRATEGY” FOR BIOFUELS AND THE BAY - II

- FOR GRAIN-BASED ETHANOL: ASSUME LIKELY NEAR-TERM SUBSTANTIAL INCREASES IN CORN ACRES AND FOCUS ON HOW TO HANDLE ADVERSE EFFECTS ON THE BAY
- FOR CELLULOSIC ETHANOL: FOCUS ON POSITIONING THE REGION TO BEST TAKE EARLY ADVANTAGE OF NEW TECHNOLOGIES AND REPLACE CORN WITH ALTERNATIVES
- FOR BIODIESEL: DEVELOP FUEL SOURCES SUCH AS SOYBEANS AND POULTRY FAT, AND EXPLORE ALGAE FROM SEWAGE TREATMENT PLANTS
- FOR COMBUSTION AND GASIFICATION, ENCOURAGE CLEAN TECHNOLOGIES FOR THE FARMSTEAD.

CONCLUSIONS AND RECOMMENDATIONS

- FOR GRAIN-BASED ETHANOL, ENCOURAGE BARLEY AND OTHER ALTERNATIVE GRAINS AND ENACT PROGRAMS TO DEAL WITH IMPACTS OF CORN THRU COVER CROPS, TILLING PRACTICES, PRECISION FARMING AND OTHER BMP'S.
- FOR CELLULOSIC ETHANOL, POSITION THE CHESAPEAKE REGION TO BE THE NATIONAL LEADER IN THE TRANSITION FROM CORN BY DEVELOPING FEEDSTOCKS AND OVERCOMING NON-TECHNICAL BARRIERS.
- FOR BIODIESEL, ENCOURAGE PRODUCTION FROM CROPS AS AN ADDITIONAL SOURCE OF INCOME, AND PURSUE ALGAE TECHNOLOGY FOR TREATMENT PLANTS.
- FOR COMBUSTION AND GASIFICATION, ENCOURAGE THE DEVELOPMENT OF CLEAN TECHNOLOGIES FOR THE FARM.
- USE INCENTIVE PRIZES AS A MEANS TO ENCOURAGE THE PRIVATE SECTOR TO TAKE RISKS ON NEW TECHNOLOGIES

SCHEDULE FOR THE REPORT

- MAY 15 – DRAFT #2 FOR CBC STAFF REVIEW
- MAY 24 – FINAL DRAFT TO TECHNICAL ADVISORY GROUP
- JUNE 13 – TECHNICAL ADVISORY GROUP MEETING (#2)
- JULY 16 – FINAL DRAFT TO CBC SUBCOMMITTEE FOR REVIEW
- JULY 23 – BEGIN PRODUCTION OF FINAL REPORT
- AUGUST 6-10 – RELEASE OF REPORT