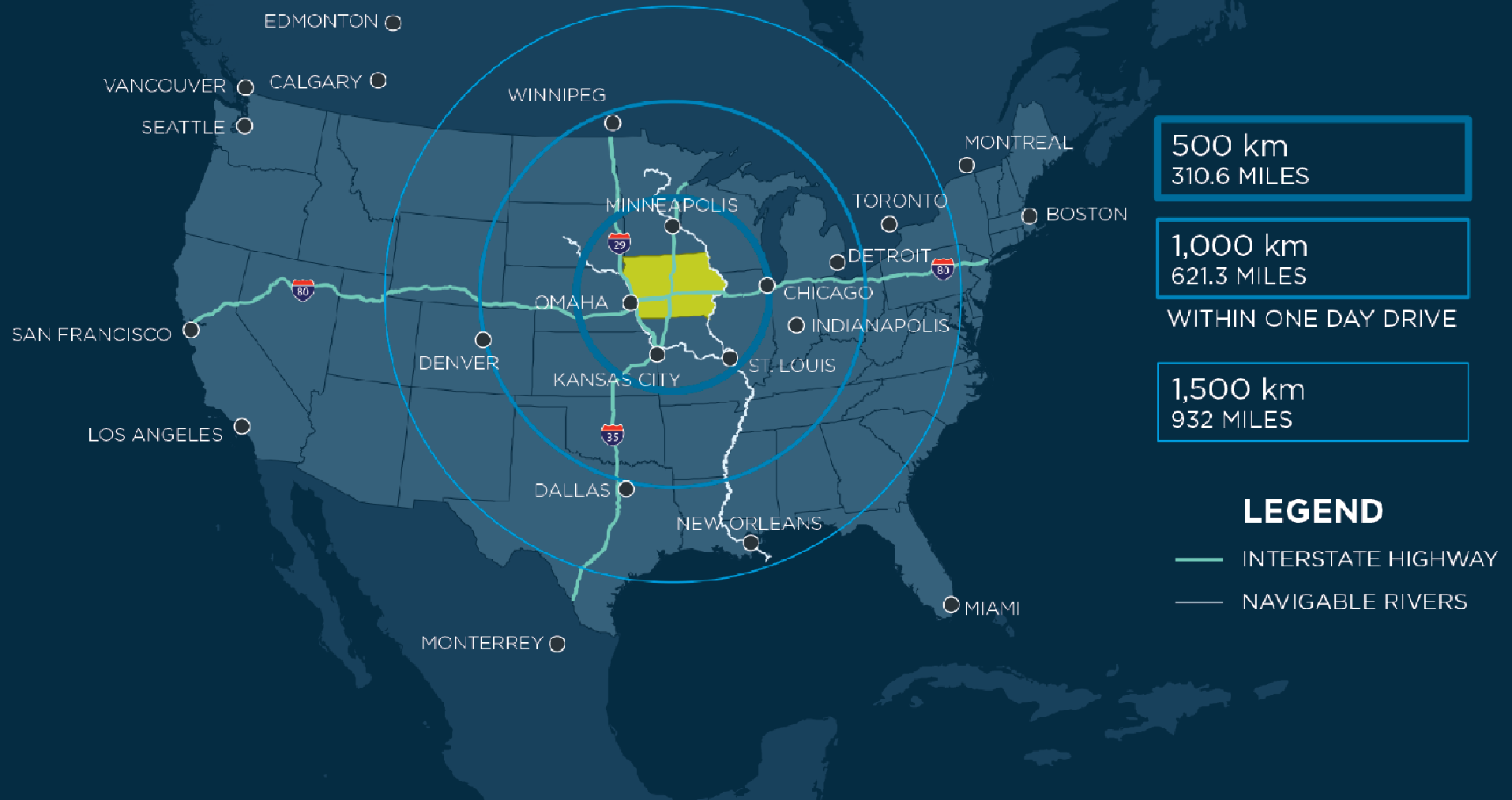




BIO Renewable Chemicals

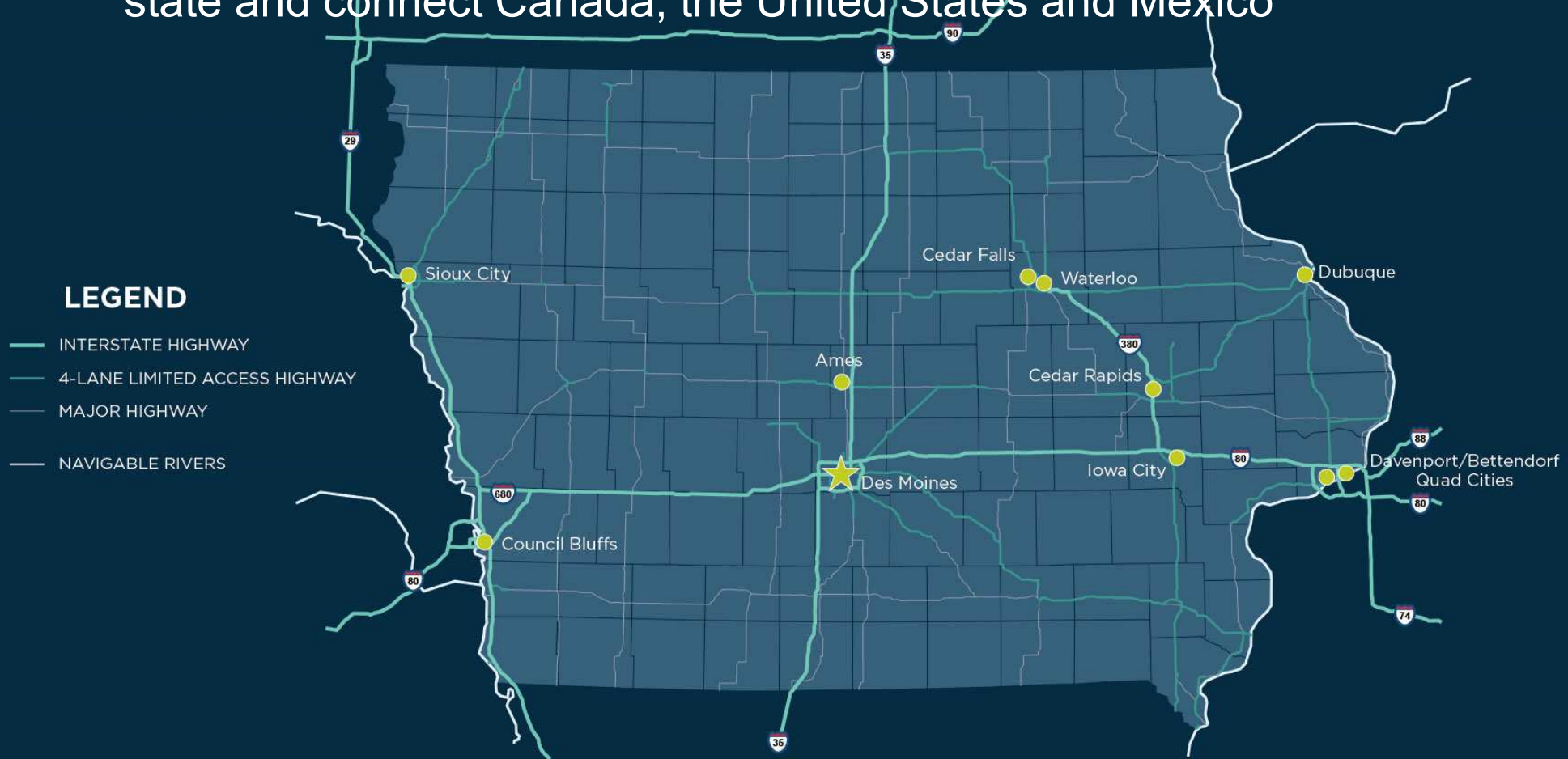
Investment Opportunities in Iowa, USA

Iowa is Centrally Located in North America

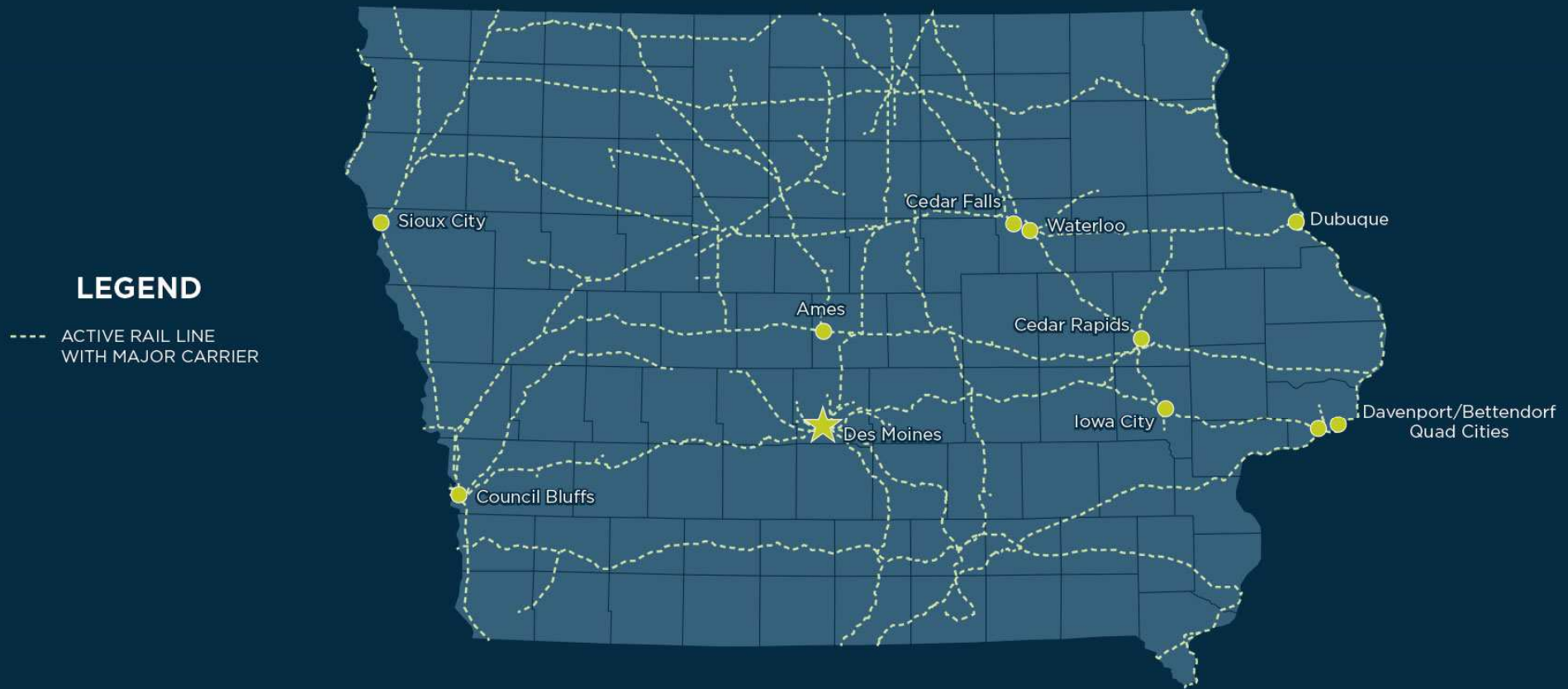


Iowa is at the Crossroads

- America's most traveled roadways, Interstates 80 and 35, intersect in the state and connect Canada, the United States and Mexico

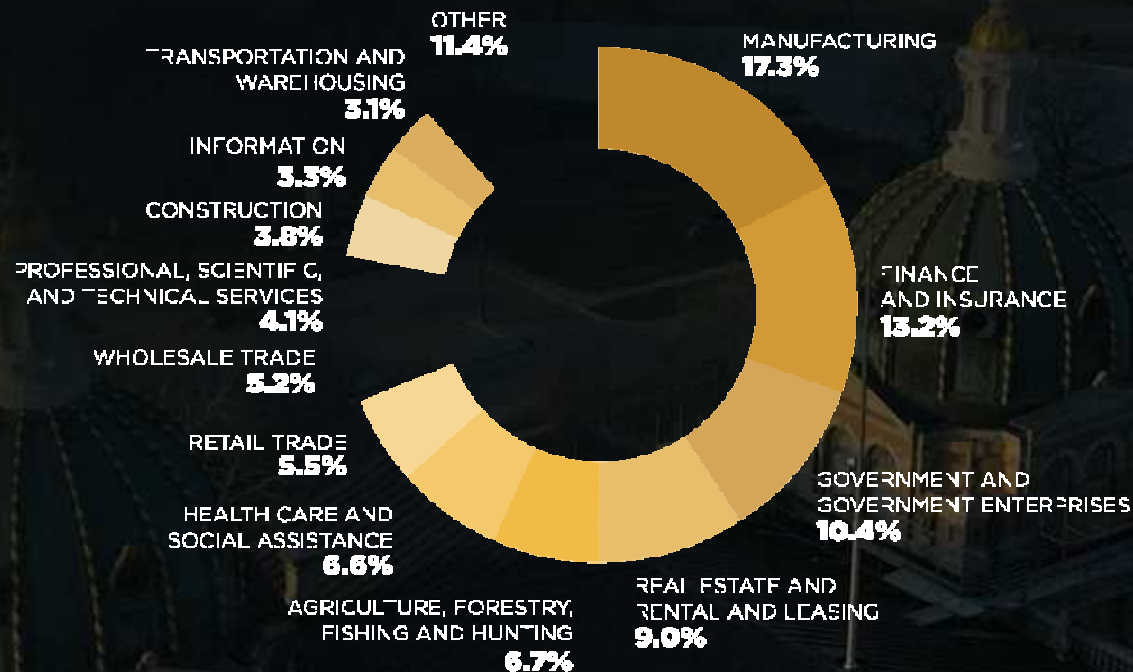


Iowa's Rail Infrastructure



Iowa's Economy

IOWA'S REAL GDP
IN 2023 WAS **\$200.4 BILLION**



Iowa Exports

1st
IN THE U.S. IN
CORN (\$3.3B)
PORK (\$2.7B)
AND FEED GRAIN (\$2.0B)
EXPORTS

2nd
IN THE U.S. FOR
SOYBEAN (\$4.8B)
AND EGG (\$260M) EXPORTS

2nd
IN THE U.S. FOR
OVERALL VALUE OF
**AGRICULTURAL
EXPORTS**
(\$16.5B)

U.S. Department of Agriculture, 2022

IOWA'S TOP EXPORTS

- INDUSTRIAL MACHINERY (\$3.0B - UP 9%)
- TRACTORS (\$2.7B - UP 29%)
- ANIMAL FEED (\$2.2B - UP 2%)
- CHEMICALS (\$1.5B - UP 3%)

Foreign Direct Investment in Iowa

SINCE 2007,

FOREIGN FIRMS
HAVE OVER

\$28 BILLION
OF CAPITAL INVESTMENT
IN IOWA

557
FOREIGN-OWNED COMPANIES
OPERATE IN IOWA
EMPLOYING OVER
71,900

Uniwold, 2023 and Bureau of Economic Analysis, 2021

17%

OF IOWA'S MANUFACTURING
WORKFORCE IS EMPLOYED BY
FOREIGN FIRMS

Quality Education and Skilled Workforce



1.7
MILLION

IOWA'S LABOR FORCE
PARTICIPATION RATE
IS ONE OF THE
HIGHEST IN THE U.S.

#2 IN COLLEGE
GRADUATION RATES

IOWA'S CONCENTRATION OF
INDUSTRIAL ENGINEERS IS **39%**
HIGHER THAN THE NATIONAL AVERAGE

IOWA IS INVESTING IN THE FUTURE

- **APPRENTICESHIP PROGRAM**
- **STUDENT INTERNSHIP PROGRAM**
- **STEM INITIATIVE**

**TRAINING, CUSTOMIZED FOR A
COMPANY'S SPECIFIC NEEDS,**
IS AVAILABLE AS AN INCENTIVE
FROM IOWA'S NETWORK OF LOCAL
COMMUNITY COLLEGES

Renewable Energy Portfolio

IOWA RANKS
1st

IN ELECTRICITY
GENERATED
FROM CLEAN
POWER SOURCES

Source: American Clean Power, 2024

62% OF IOWA'S TOTAL
POWER OUTPUT
COMES FROM
RENEWABLE RESOURCES

Source: Energy Information Administration, 2023

IOWA HAS THE CAPACITY TO GENERATE
13,280
MEGAWATTS OF CLEAN ELECTRICITY

Source: American Clean Power, 2024

Renewable Energy Portfolio

IOWA IS IN THE
TOP 10
BEST STATES FOR
POWER GRID
RELIABILITY

U.S. News & World Report, 2023

IOWA'S INDUSTRIAL
ENERGY RATE IS
14% LOWER
THAN THE
NATIONAL AVERAGE

Energy Information Administration, 2023

COMPARED TO THE NATIONAL AVERAGE,
IOWA UTILITIES EXPERIENCE

43% FEWER POWER
OUTAGES
AND THEY ARE
48%
SHORTER

EIA, 2021

Iowa Manufacturing



\$34.8

BILLION, OR 17% OF IOWA'S
GROSS STATE PRODUCT
IS GENERATED BY
MANUFACTURING

Source: Bureau Of Economic Analysis, 2023

60% OF IOWA'S EXPORTS
COME FROM THE
MANUFACTURING INDUSTRY

Source: WISFTrade, 2023

MANUFACTURING EMPLOYS
14.5%
OF IOWA'S TOTAL
WORKFORCE

Source: Bureau of Labor Statistics, 2022

MANUFACTURING
JOBS PAY **20%**

MORE THAN THE AVERAGE
PRIVATE SECTOR JOBS

Source: Bureau of Labor Statistics, 2022

Iowa's Advanced Manufacturing Industry



CF Industries in Sioux City, Iowa



Lyondell Chemical in Clinton, Iowa



Bayer Cropscience in Muscatine, Iowa



OCI Fertilizer in Wever, Iowa



Centers of Excellence

- **Iowa State University**
 - College of Engineering
 - Center for Industrial Research and Service
 - Electric Power Research Center
- **U.S. Dept. of Energy - Ames Laboratory**
 - Critical Materials Institute (CMI) seeks to accelerate innovative scientific and technological solutions to develop resilient and secure supply chains for rare-earth metals and other materials critical to the success of clean energy technologies
 - CMI focuses on rare earth materials, battery materials (lithium, cobalt, manganese, graphite), indium and gallium
- **University Northern of Iowa**
 - Metal Casting Center
 - Department of Applied Engineering & Technical Management
 - Future College of Engineering program
- **University of Iowa**
 - College of Engineering

**IOWA STATE
UNIVERSITY**
College of Engineering



IOWA

College of Engineering

Agriculture in Iowa

IOWA IS THE
2nd

WEALTHIEST
AGRICULTURE STATE
WITH TOTAL FARM
CASH RECEIPTS OF
\$32 BILLION

U.S. Department of Agriculture, 2022

IOWA RANKS

1st
IN TOTAL HECTARES OF
CROPLAND HARVESTED

2nd
IN THE U.S. FOR
OVERALL VALUE OF
**AGRICULTURAL
EXPORTS**
(\$16.5B)

U.S. Department of Agriculture, 2022

IOWA FARMERS HAVE NEARLY
\$34 BILLION
INVESTED IN FARM PRODUCTION EXPENDITURES



In India, you call it Maize



In the U.S. we call it Corn



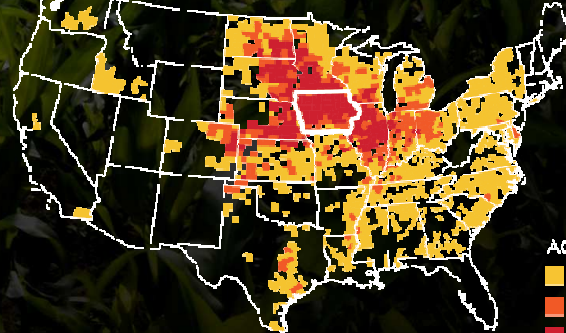
Iowa Agriculture Facts

#1 IN THE NATION
IN CORN PRODUCTION
WITH **2.52 BILLION**
BUSHELS HARVESTED IN 2023

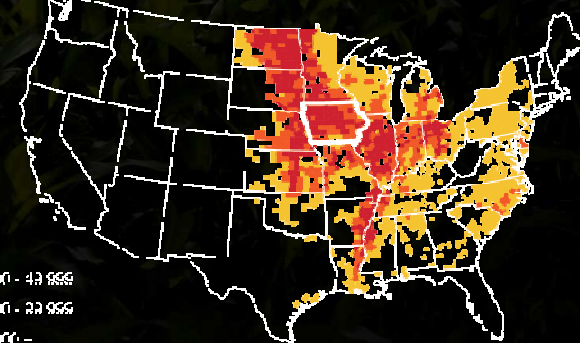
#2 IN THE NATION
IN SOYBEAN
PRODUCTION WITH
572.5 MILLION
BUSHELS HARVESTED IN 2023

IOWA IS THE **EPICENTER** OF THE NATION'S **CROP GROWING REGION**

HARVESTED ACRES OF CORN



HARVESTED ACRES OF SOYBEANS



ACRES
10,000 - 49,999
50,000 - 99,999
100,000 -

Food Manufacturing and Processing

IOWA ANNUALLY
PRODUCES
MORE THAN
\$45
BILLION
IN FOOD
PRODUCTS

26%
OF IOWA'S MANUFACTURING GDP
COMES FROM THE FOOD PROCESSING INDUSTRY

Source: Bureau of Economic Analysis, 2022

IOWA PRODUCES
OF THE U.S. **8%**
FOOD SUPPLY

Source: USDA, 2022

1ST

CORN PRODUCTION
PORK PRODUCTION
EGG PRODUCTION
RED MEAT PRODUCTION

2ND

SOYBEAN
PRODUCTION

IOWA IS
HOME TO
30
LARGEST 100
FOOD MANUFACTURERS
AND PROCESSORS





Biofuels

IOWA RANKS

1st

IN ETHANOL AND
BIODIESEL
PRODUCTION

IOWA'S BIOFUELS
PRODUCTION
IMPACTS OVER
57,000
JOBS

27%

OF TOTAL U.S.
ETHANOL
IS PRODUCED
IN IOWA

5th

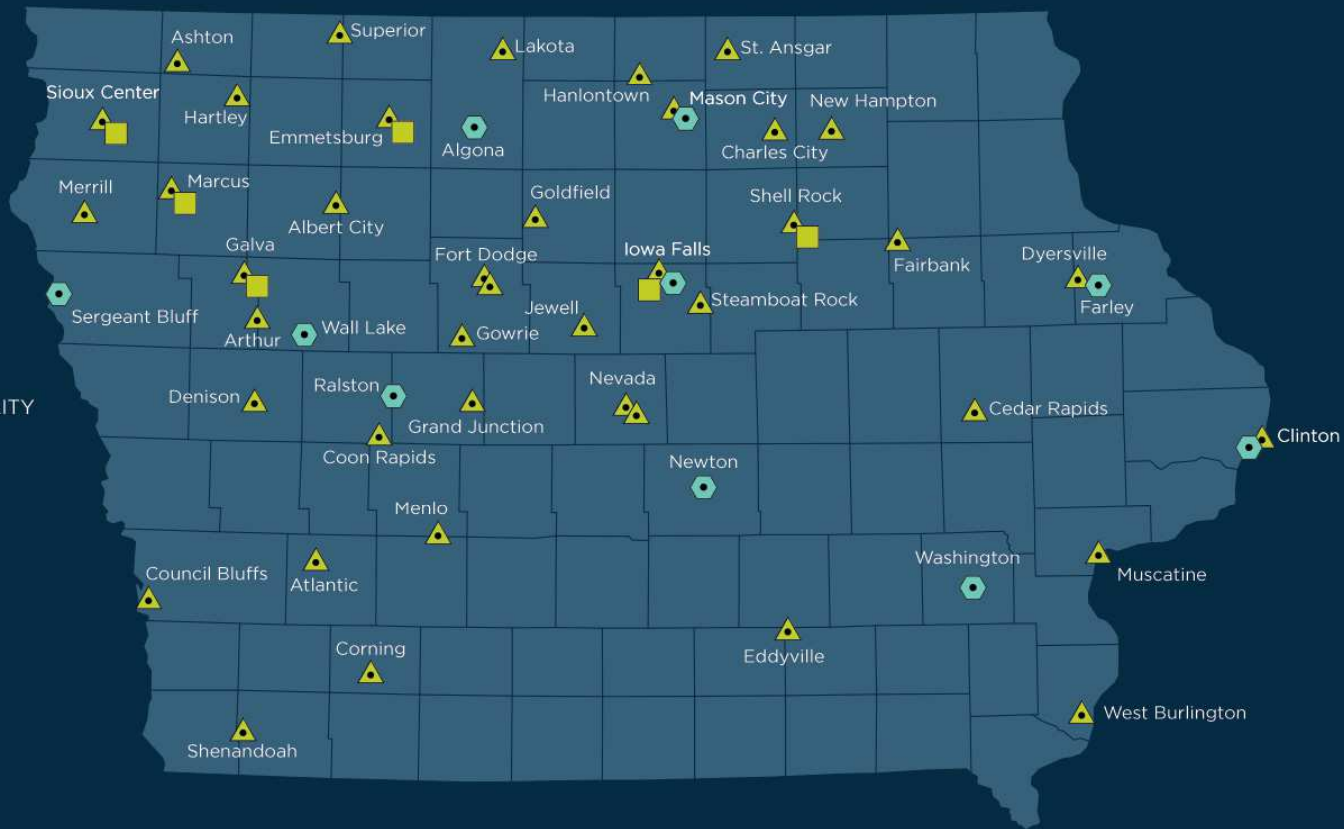
IN THE U.S. FOR
BIOGAS PRODUCTION POTENTIAL

American Biogas Council, 2023

52 Iowa Biorefinery Facilities

LEGEND

- ▲ ETHANOL FACILITY
- NEXT GENERATION ETHANOL FACILITY
- ⬡ BIODIESEL FACILITY



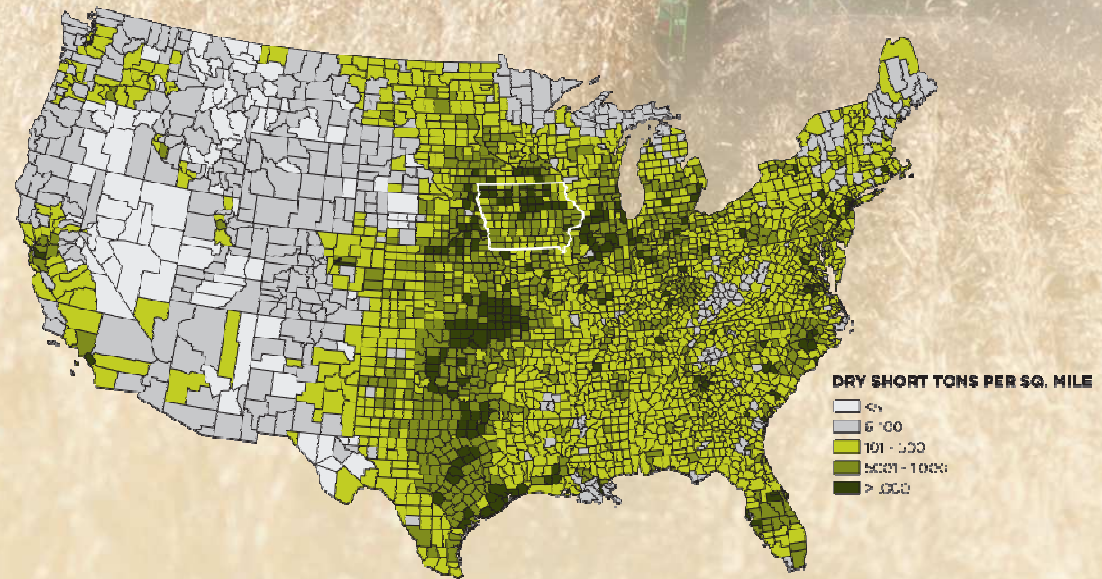
Abundant Biomass Resources in Iowa

IOWA HAS THE
2nd
LARGEST
SUPPLY OF BIOMASS
WITH THE ABILITY TO HARVEST
16.7 MILLION
DRY TONS PER YEAR

BIOMASS RESOURCES

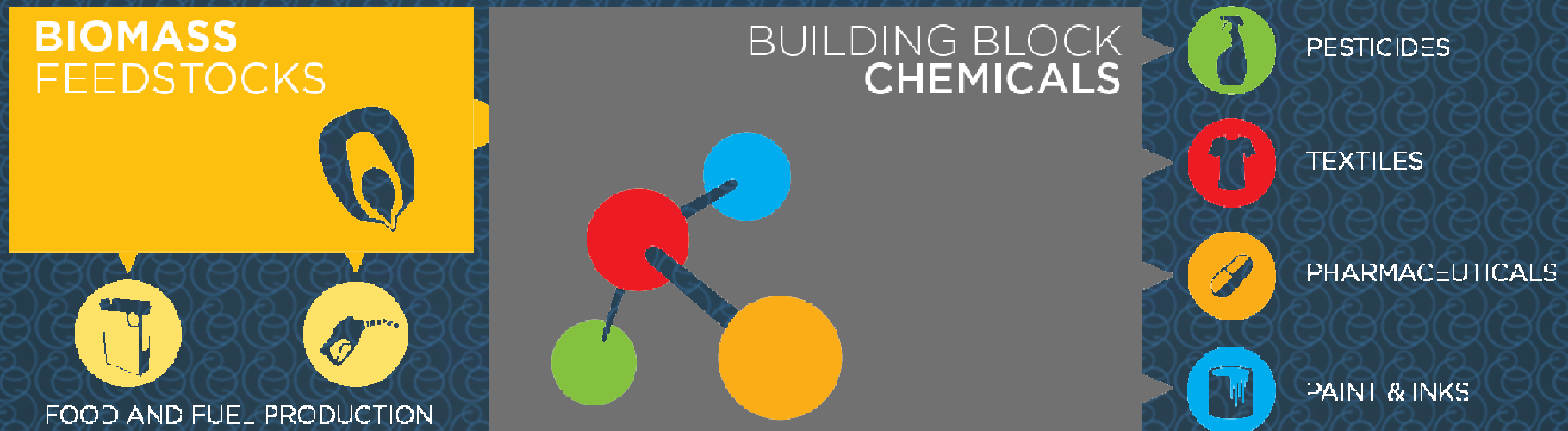
Mature-market Medium Scenario - Map excludes currently used resources.

Green colors indicate sufficient supply density to support >750,000 tons per year within a 50-mile radius, S70/Dry-Ton

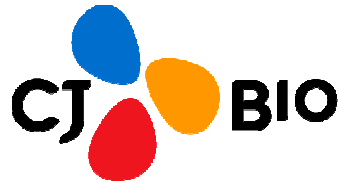


Renewable Chemical Production

- Incentive program to encourage the production of biochemicals from biomass feedstocks
- Biochemical production is the fastest growing segment in the biosciences industry



Iowa's Biosciences Industry



Renewable Chemical Projects in Iowa



a German company is making renewable natural gas from cornstalks
(leftover crop residue/biomass after grain harvest)



makes USP & technical grade glycerin from soybeans



Spiber

a Japanese company, will make fibers used in textiles from corn starch



owned by Mitsubishi Chemical, uses corn and soybeans to make biorational pesticides that are environmentally friendly



Joint Venture will be making 1,4-butanediol (BDO), an intermediate chemical polymer, from corn starch



A German company, makes caustic soda and sodium hydroxide from corn

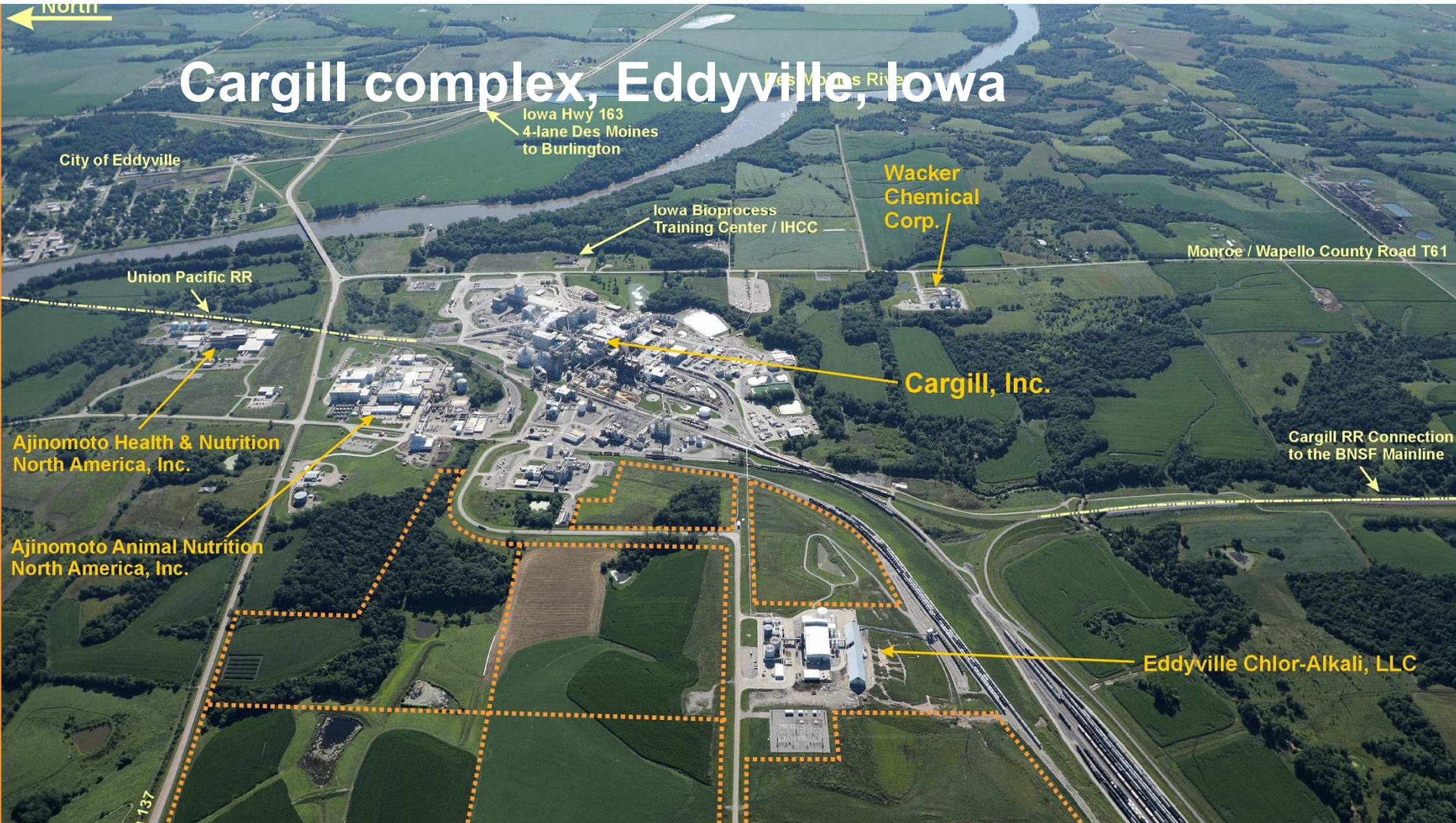
Verbio in Nevada, Iowa



Valent Biosciences in Osage, Iowa



Cargill complex, Eddyville, Iowa



City of Eddyville

Iowa Hwy 163
4-lane Des Moines
to Burlington

Des Moines River

Iowa Bioprocess
Training Center / IHCC

Wacker
Chemical
Corp.

Monroe / Wapello County Road T61

Union Pacific RR

Cargill, Inc.

Cargill RR Connection
to the BNSF Mainline

Ajinomoto Health & Nutrition
North America, Inc.

Ajinomoto Animal Nutrition
North America, Inc.

Eddyville Chlor-Alkali, LLC

137

Other BIO Renewable Chemical Opportunities in Iowa

A photograph of a bioprocessor, a tall cylindrical metal vessel with a manometer on top, situated in a laboratory or industrial setting. The background shows a large aircraft wing and fuselage, suggesting the application of bio-chemicals in aviation.

Sustainable Aviation Fuel (SAF)

A photograph of a white concrete mixer truck with a large red and white striped logo that says "BioDiesel" on its side. The truck is parked in an industrial or agricultural setting.

Renewable diesel fuel

A photograph of a green tractor with a large tank on its back, driving through a field of green crops. The tractor is emitting a mist or spray, likely from a fertilizer or pesticide application system.

**“Green” ammonia
maritime fuel or crop fertilizer**

A close-up photograph of a person's hands holding a large amount of small, dark, granular particles. The particles have a textured, porous appearance, characteristic of microplastics or bio-based plastic granules.

Renewable plastics

Other products made from Iowa crops



a Japanese company, makes MSG
for food ingredients



a Korean company, makes amino
acids for animal feed

WACKER

a German company, makes cyclodextrins
as stabilizers and carriers in food and
pharmaceutical products

Iowa's Tax & Business Climate

- No sales taxes on industrial machinery & equipment or computers
- No property taxes on industrial machinery & equipment
- No personal property or inventory tax
- No sales tax on electricity or natural gas used directly & primarily in the manufacturing process
- Single Factor Income Tax (sales in Iowa) with no throwbacks and low rate of 5.5%
- Statutory 6.5% R&D tax credit; 50% refundable
- Personal income tax rates are being lowered to a flat 3.9%
- Right to Work State
- Streamlined permitting process

Incentives to Grow Your Business in Iowa

Amounts depend on job creation, wages/salaries paid and new capital investment

- **High Quality Jobs Program - assistance in the form of loans, forgivable loans, tax credits, exemptions and/or refunds:**
 - Investment tax credit – you will likely do business in Iowa free from state income taxes for at least 12-15 years
 - Refund of State's 6% sales & use tax on new construction building materials
 - Direct financial assistance – cash of \$5,000 to \$10,000 per qualifying job
- **Iowa New Jobs Training**
 - Flexible job-training programs that provide customized training incentives of \$2,000 - \$10,000+ for each new employee, depending on wages
- **Local Iowa Community Property Tax Incentives**
 - Real estate property tax incentives can equal 10%-25% of a new building's construction cost

Specific Incentive for Biobased Renewable Chemicals

- All of the incentives on the previous page, PLUS
- A refundable tax credit of \$0.05 per pound of qualifying renewable biochemical “building block chemicals” up to a maximum of \$1 million per year X 5 years = \$5 million maximum
- “Building block chemical” includes but is not limited to high-purity glycerol, oleic acid, lauric acid, methanoic or formic acid, arabonic acid, erythronic acid, glyceric acid, glycolic acid, lactic acid, 3-hydroxypropionate, propionic acid, melanic acid, succinic acid, fumaric acid, malic acid, aspartic acid, 3-hydroxybutyrolactone, acetoin, itaconic acid, furfural, levulinic acid, glutamic acid, xylonic acid, xylaric acid, xylitol, arabitol, citric acid, aconitic acid, 5-hydroxymethylfurfural, gluconic acid, glucaric acid, sorbitol, gallic acid, ferulic acid, nonfuel butanol, nonfuel ethanol, benzene, toluene, xylene, ethylbenzene, butanoic acid, hexanoic acid, octanoic acid, pentanoic acid, and heptanoic acid, ethylene glycol, and 1,4 butanediol, or such additional molecules as added by Iowa Economic Development

Iowa's Value Proposition

- Central North American location & plentiful raw materials
- Lower cost of doing business
- Average industrial electric rates are 14% below the U.S. average & are sustainable
- Construction or costs are 8% below the U.S. average
- Employer health insurance costs are 6% below U.S. averages
- Manufacturing wages are 13% lower than the national average
- Lowest cost of living in the U.S. – CNBC 2023
- Pro-business government that gets to “yes” quickly



Economic Development

Thank You

Allen Williams

BUSINESS DEVELOPMENT MANAGER IOWA ECONOMIC DEVELOPMENT AUTHORITY

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allen.williams@iowaeda.com