Leading in Sustainable Energy Strategy

Midwest Energy Solutions Conference

February 19, 2021

International Energy Agency Scenarios – 2040

2020 World Energy Outlook Key Points

- Shift toward lower-carbon energy
  - Displace coal in electricity generation
  - Significant increase in renewables & biofuel
- Energy efficiency
  - Must offset energy demand from population and standard of living increases
    - ~ 1.3 -2 billion more people
    - ~ 0.8 -1 billion more vehicles
    - Universal access to modern energy
  - Accounts for around 40% of projected GHG reductions
- Technology advancements
  - Advanced biofuels
  - Blue/Green Hydrogen
  - Carbon capture use and sequestration (CCUS)
  - Batteries and grid storage
  - Renewables & nuclear
  - Land use and nature-based sequestration

IEA Energy Projections for 2040 at a Glance

2019* Actuals	Stated Policies Scenario	Sustainable Development Scenario
Crude Oil 31%	Crude Oil 28%	Crude Oil 23%
Coal 26%	Gas 25%	Gas 23%
Gas 23%	Coal 19%	Other Renewables 18%
Bioenergy 9%	Bioenergy 11%	Bioenergy 13%
Nuclear 5%	Other Renewables 8%	Coal 10%
Hydro 3%	Nuclear 5%	Nuclear 9%
Other Renewables 2%	Hydro 3%	Hydro 4%
Total Energy Demand** 287	Total Energy Demand 341	Total Energy Demand 260

** Latest year available*
*** In million boe per day*

Source: IEA, World Energy Outlook 2020

[1] BOE = Barrel of oil equivalent

Leading in Sustainable Energy

Lower Carbon Intensity

Target: Reduce Scope 1 & 2 GHG emissions per BOE[1] processed **30%** by 2030 from 2014

Linked to executive and employee **compensation**

Increase Renewable Fuel Production & Energy Use

Significant
Investment in Martinez and Dickinson renewable diesel projects

Threefold
Anticipated increase in renewable fuels production by 2025

>50-75%
Approximate reduction in carbon intensity when comparing renewable diesel to petroleum diesel

Improve Energy Efficiency

Five Refineries
Received ENERGY STAR certification in 2020

ENERGY STAR AWARD 2020
PARTNER OF THE YEAR
Sustained Excellence

Embrace Innovation & Deploy Advanced Technologies

$200 Million
Invested in advanced biofuel research & development by Virent, MPC's subsidiary

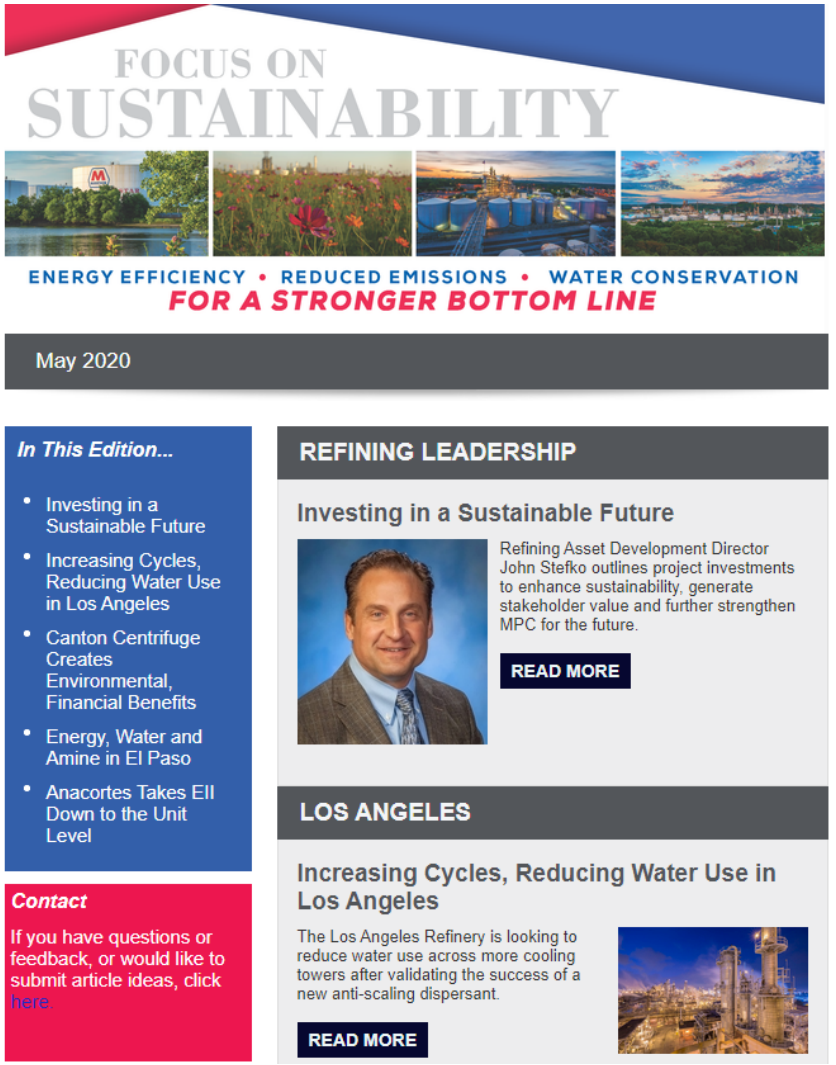
VIRENT

Conserve Natural Resources & Reduce Waste

Focus on Water
Program launched at MPC refineries in 2020 to optimize and reduce water use over time

MPC's "Focus On Energy" Program

- Executive Sponsors – Executive VP of Refining and VP of ESS&PQ
- Corporate "Energy Technologist" and "Energy Coordinators" in each plant/organization drive program
- "Focus on Energy" framework:
  1. Identify, establish and track operating parameters that influence energy use or emissions.
  2. Benchmark energy performance and develop an "energy roadmap" towards best in class design and operation (based on Solomon EII®)
  3. Ensure energy efficiency is designed into new projects.
  4. Implement programmatic energy efficiency improvements (e.g. insulation, steam system performance and heat integration).
  5. Engage workforce on the importance of energy efficiency so it remains part of our culture.
- The program has:
  - Avoided ~1.8 billion btu/hour of energy use and millions of tonnes of CO2e. This is equivalent to the energy used by about 100,000 homes.
  - Saved over $500 million since 2010.
  - Gained knowledge and recognition as an ENERGY STAR® Partner of the Year!


FOCUS ON
SUSTAINABILITY

ENERGY EFFICIENCY • REDUCED EMISSIONS • WATER CONSERVATION
FOR A STRONGER BOTTOM LINE

May 2020

In This Edition...

- Investing in a Sustainable Future
- Increasing Cycles, Reducing Water Use in Los Angeles
- Canton Centrifuge Creates Environmental, Financial Benefits
- Energy, Water and Amine in El Paso
- Anacortes Takes EII Down to the Unit Level

Contact

If you have questions or feedback, or would like to submit article ideas, click here.

REFINING LEADERSHIP

Investing in a Sustainable Future

Refining Asset Development Director John Stefko outlines project investments to enhance sustainability, generate stakeholder value and further strengthen MPC for the future.

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LOS ANGELES

Increasing Cycles, Reducing Water Use in Los Angeles

The Los Angeles Refinery is looking to reduce water use across more cooling towers after validating the success of a new anti-scaling dispersant.

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