Government Biodiesel

Costilla County-Owned, Operated Plant Produces Fuel, Jobs

With a declining population and ag-based economy, how does a county create new jobs?

For Costilla County, CO, the answer was to build a biodiesel plant.

The south central Colorado county now is operating an integrated canola/sunflower-crush and biodiesel plant producing 300,000 gallons per year from locally-grown feedstocks.

The biodiesel currently is being used as a fuel blend in the county's fleet of 40 diesel vehicles.

"Part of what attracted the county to the project is that even if the operation is a wash financially, we are paying our own workers to create fuel rather than sending money out of the county to a petroleum company," said Project Manager Ben Doon.

The county did a feasibility study, and biodiesel rose to the top of the study for two primary reasons:
- Feedstock are available due to the long history of canola being raised in the area.

Even with such a small population, the county has large road maintenance duties. In our region, we maintain more roads than most larger populated counties."

- Ben Doon, Project Manager

Facility Feature

Costilla County Biodiesel
719-672-0320 | Mesita, CO
www.costillacounty-co.gov

Ben Doon, Project Manager
Dan Quintana, Chemist
Crestina Martinez, Business Manager

Employees: 3 full-time, 2 part-time
Capacity: 300,000 gpy
Feedstock: Canola, sunflower

Plant History
The plant, which as of mid-June was still in its final phases of construction, was the brainchild of County Commissioner Joe Gallegos who took office in 2001 but is no longer county commissioner.

Gallegos, who was a former petroleum industry engineer, was looking for ideas to stimulate the rural economy of Costilla County, which has approximately 3,600 people.

"Our county is very low-income," Doon said. "One thing people kept asking is because we are ag-based, what about renewable energy supporting our ag infrastructure?"
Construction Challenges

Rather than hire a construction firm, the plant was designed and built by county employees over the six-year construction period.

“This is a totally integrated plant—we take the seed crops and crush them for processing into biodiesel,” Doon said. “Every step in the process we had to figure out on our own.”

According to Doon, equipment for the plant came from all across the globe.

“That is part of the reason it took so long to build the plant,” said Doon.

“For example, we had some bizarre wiring,” he said. “For the crusher, the manual was in Chinese. We had to figure out how to do it ourselves.”

Currently, the system is being operated without computer automation.

In the next phase, computer automation and other devices will be installed, to make the operation more efficient, Doon noted.

The crush will be automated, and methanol recovery also will be automated.

“If we get comfortable, we will tie all the machines together and automate them,” Doon said.

Co-Products

Crude glycerin produced as a co-product of the biodiesel process currently is being stored for future use.

“Moving forward,” said Doon, “we plan to replace propane as our fuel source with the glycerin.”

Another co-product produced is canola meal or sunflower meal, through the crush operation.

“There are a lot of family farms here with 20 to 50 head of cattle, horses, and other livestock,” Doon said. “In the winter, we can’t keep up with the demand. Our biggest customers are the cattle folks in the winter.”

According to Doon, the farmers come to the plant to pick up the feed, and there is no formal marketing operation associated with the feed.

“It’s just word of mouth,” he said.

Plant Storage Capacity

The plant’s storage capacity consists of:
- A 1,500 gallon B100 tank.
- Outdoor fuel tanks that hold 4,000 gallons of B40 in the winter and B80 in the summer.

“There’s not enough fuel being produced for the entire county fleet,” Doon said.

The plant has no rail access, only truck access, Doon noted.

County worker Dave Guerra fuels a dump truck with B40. At present the biodiesel fuel produced at the plant is utilized in the county's diesel vehicles.
Marketing

All the plant’s fuel is being utilized for county vehicles. According to Doon the plant is not allowed to sell fuel to other users.

However, the El Pomar Foundation is investigating privatization options for the plant such as a non-profit, farmer cooperative structure, which would allow it to market fuel to the public.

Lessons Learned

Doon said that despite the challenges the county had in developing the plant, it was a wise move.

“It took longer than we anticipated,” Doon said. “The closest thing we had to engineers were the electricians here. We were doing everything from storing crops to producing fuel.”

He said if the county had to do it now, the plant would take half the time to construct.

“The biodiesel is good quality, and the feed meal is in high demand,” Doon said. “We haven’t heard one word of complaint from our drivers and mechanics about biodiesel fuel in 2.5 years of use.”

Myke Feinman, editor