



## STATE ENERGY PROGRAM STELLAR PROJECTS

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

# Minnesota's Home-Grown Transportation Fuel

*Ethanol is quickly becoming the alternative transportation fuel of choice for Minnesota, a state with a strong farm economy and home to more than a dozen ethanol production facilities.*

**I**n May 2001, Minneapolis-St. Paul became the 81st Clean Cities (CC) coalition. “Twin Cities already has an innovative alternative fuels program with several influential partners participating and



Tim Gertach/PIX08484

*An ethanol E85 refueling station in suburban Minneapolis, Minnesota.*

growing public support,” says Melinda Latimer, Clean Cities program manager for the U.S. Department of Energy's (DOE) Midwest region.

The Twin Cities Clean Cities Coalition (TC4) makes Minnesota the 41st state participating in DOE's Clean Cities, which is a voluntary program to promote use of alternative fuels and alternative fuel vehicles (AFVs).

Already, Minnesota has more refueling stations for E85—a mixture of 85% ethanol with 15% gasoline—than any other state in the country. E85 is suitable for use in flexible fuel vehicles, capable of running on ethanol, gasoline, or any combination of the two fuels. Minnesota's success is due, in part, to a unique loan program to station owners for conversion of one or more tanks and pumps to ethanol. The experience points the way for other states to advance clean, alternative transportation fuels and AFVs.



## Ethanol rises to the top

Since 1992, Minnesota has a robust program in place to support production and consumption of ethanol. Today it is the only state in the country to require that all of its gasoline contain 2.7% oxygen by weight, and ethanol is Minnesota's oxygenate of choice. Since Minnesota's drivers consume 2.4 billion gallons of gasoline per year and ethanol as an oxygenate is 10% of that amount, this creates a market of 240 million gallons per year for ethanol producers in the state.

In fact, Minnesota is home to 14 ethanol production facilities. Twelve of these are owned by cooperatives of corn farmers, who make ethanol by fermenting corn starch and then distilling the batch to separate the liquid alcohol. One bushel of corn yields 2.6 pounds of corn meal and enough corn starch to produce 2.6 gallons of ethanol. Two additional production facilities are operated by dairy processors that make ethanol as a byproduct from dairy residues. For these farming cooperatives, ethanol represents another market for agriculture.

"We're an agricultural state," says Mike Taylor, project consultant for the Minnesota Department of Commerce, "and ethanol seems to make sense to many Minnesotans." For example, the Minnesota Corn Growers Association has been a strong supporter of the state's ethanol program.

Even state legislators from rural districts are getting involved with alternative fuels. This year, several of them proposed legislation to mix 2%–5% biodiesel with all on-road diesel in the state. Biodiesel is similar to ethanol in that it is also produced from renewable resources, such as, for example, vegetable oils, fatty residues from agricultural and meat processing, etc. It may be blended in varying percentages with conventional diesel without requiring modifications to diesel engines.

## Twin Cities cleans its air

For the past several years, Clean Cities has been working with state energy offices such as the Energy Division of Minnesota's Department of Commerce through DOE's State Energy Program (SEP). Among other activities, SEP (special projects) funds the



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***For more than a decade, Minnesota has had perhaps the most active program among state energy offices supporting ethanol E85 as an alternative transportation fuel.***

development of infrastructure to distribute alternative transportation fuels.

Alternative fuels consist of compressed natural gas, liquid natural gas, propane, ethanol (E85), methanol (M85), biodiesel (B20), and electricity. All CC coalitions, including TC4, are committed to promoting a mix of alternative fuels that best suits their region through a "fuel-neutral" approach. E85 has been a strong part of TC4's initial success, but future development depends on a diversity of fuels.

Most of the Clean Cities coalitions are located in or near large metropolitan areas that have experienced air pollution problems due, in large part, to emissions from transportation vehicles. Clean Cities helps reduce urban pollution by promoting use of clean, alternative fuel vehicles and their associated fuels. All AFVs are low-emissions or ultra-low-emissions type vehicles.

The TC4 coalition has pursued a public education campaign around the clean air issue. This effort is led, in part, through the American Lung Association of Minnesota's (ALAMN) *Clean Air Choice Campaign* for informing consumers about the lower emissions from AFVs running on clean alternative fuels. For example, Ford Motor Company, a coalition member, gave away an E85 flexible-fuel car in April at the end of a season-long promotion with the National Basketball Association's Minnesota Timberwolves. There were also 25 TV commercials and 35 radio commercials that aired through April. This campaign

distinguishes TC4 because most CC coalitions have focussed on developing niche markets for alternative fuels among owners of fleets of vehicles rather than public education.

According to ALAMN's Tim Gerlach, "Changing the way people fuel their vehicles is a major undertaking. That's why education and marketing are just as important as building refueling sites."

## Stations convert to E85

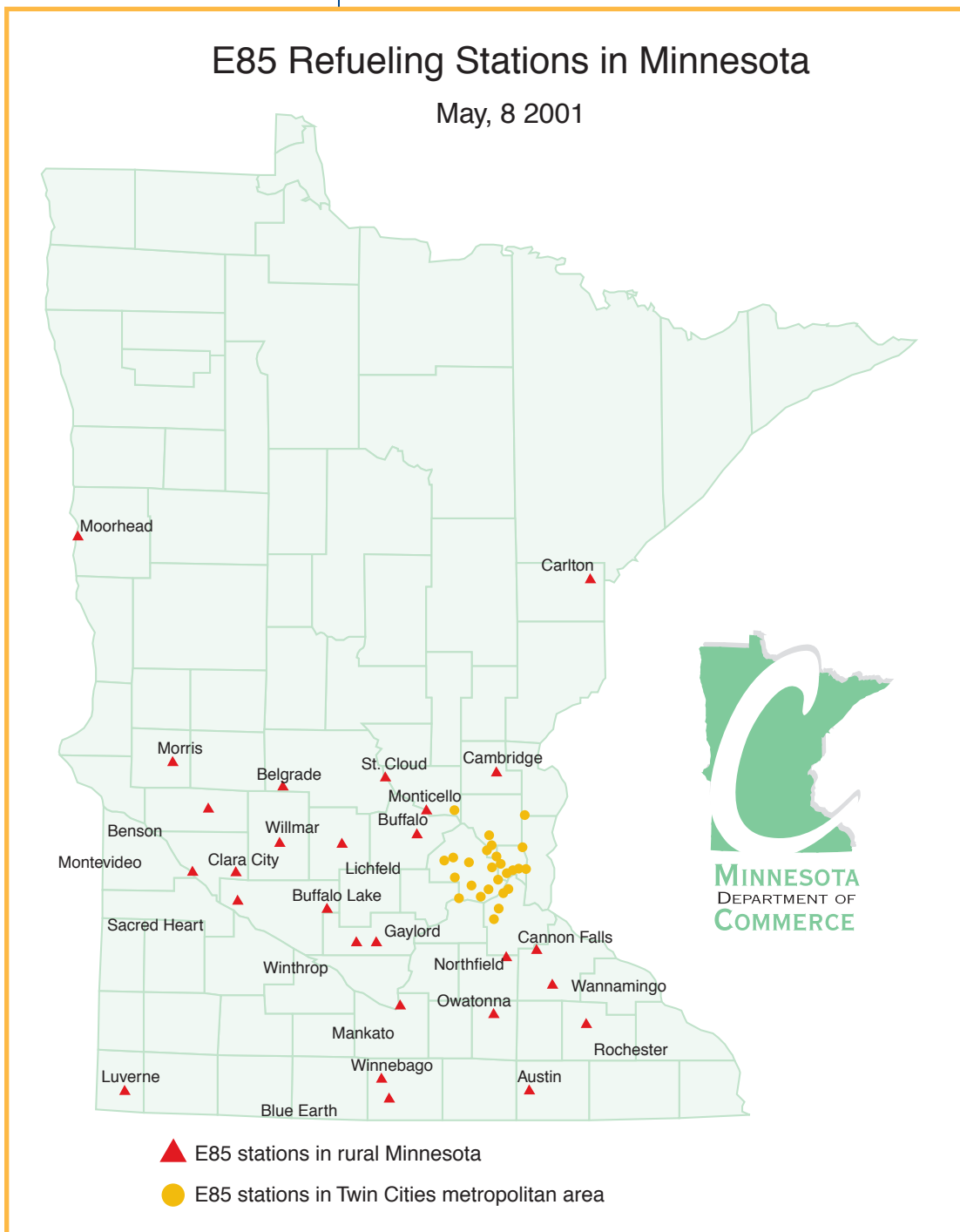
The coalition's key challenge has turned out to be getting service station owners involved. "Once there is a critical mass of stations and vehicle owners," says Gerlach, "market forces take over."

The coalition's strategy is to use the funding from coalition partners and the DOE to provide "forgivable" loans to station owners for installation and conversion of pumps to dispense E85. The funding is used to clean out the tanks and ensure proper fuel-equipment compatibility. For this pilot project, conversions have turned out to be the most cost-effective option compared with installing new tanks and pumps.

For their part, station owners commit to offer E85 for at least four years. If during this four year period they want to reconvert to conven-

tional fuels, they have to pay some of the money back. Otherwise, the loan is "forgiven" at the end of the four years. The hope is that markets will develop sufficiently to keep station owners interested in providing E85 for much longer than the loan period.

Unfortunately, negotiating with many different station owners has been time consuming, according to the state energy division's Mike Taylor. The problem was



*Like several states with programs to support development of alternative transportation fuels, Minnesota publishes an online map of E85 refueling stations.*

each station owner has a different set of requirements. According to Taylor, the real breakthrough came in early 2000 when the coalition negotiated with a national chain of convenience stores, called Holiday Stationstores, to convert 15 stations at once. Thus TC4 was able to hammer out requirements for all the stations at once. Furthermore, the deal with the Holiday chain seemed to create a positive momentum that won over other station owners.

As of May 2001, Minnesota has 55 refueling stations providing E85, which is almost half of all such stations in the country. Correspondingly, ethanol consumption is growing quickly, according to the state energy division, which tracks fuel sales. Monthly consumption in January 2000 was 11,000 gallons. By June, it had jumped to 36,000 gallons. And in 2001, ALAMN estimates E85 consumption will double that of 2000. The Minnesota Department of Commerce estimates that there are 50,000 flexible-fuel vehicles in the state capable of running on E85, gasoline, or a combination of the two fuels.

As the Twin Cities of Minneapolis–St. Paul formally joins DOE's Clean Cities, its coalition already has something to show CC coalitions in the rest of the country. Recent awards include the Minnesota Governor's Awards for Excellence in Waste and Pollution Prevention and DOE's National Partners Award for the three coalition members—the Minnesota Corn Growers Association, Holiday Stationstores, and the Minnesota Department of Commerce.

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