



Darkwing Syrup, Sweet and Efficient

Ronnie Leroux started his rural business, Darkwing Enterprises, three years ago. He is one of Vermont's many new maple sugar makers working to earn a living off of Vermont's forests and their sweetest natural resource. Ronnie's business is part of the dramatic uptick of the sugar industry across the state which has expanded 131% since the early 1990's. In his first season, he collected sap from 8,500 taps, now he has expanded to 19,500 taps. He hopes to produce between 6,500 and 8,000 gallons of syrup this season contributing to the 42% of the total US maple crop that is produced in Vermont.



Darkwing Enterprises efficiently transforms sap into syrup.

In 2015, Ronnie received a \$16,836 Rural Energy for America Grant to help him purchase a reverse osmosis (RO) machine capable of reducing his operation's energy usage and helping him to reinvest his roughly \$6,500 annual energy savings into his expanding business.

Making maple syrup is an extremely energy intensive process. Sap collected from maple trees must be concentrated from 1.9% sugar to 59.6% sugar by distilling out water. It takes 40 gallons of sap to make one gallon of syrup. Traditionally, this is done by boiling the sap on a wood or oil powered evaporator. The hours of boiling necessary to make syrup mean that 4.1 gallons of oil are required to make each gallon of syrup. In the 1970's, sugar makers started experimenting with reverse osmosis, a method originally intended to purify water by forcing liquid through filters to remove all other materials. The sugar industry saw value in the byproduct of the reverse osmosis process. By running sap through an RO machine, they could remove excess water leaving behind the valuable sugar concentrate all while using, in Ronnie's case, 73% less energy than the original boiling process.

Ronnie, like many sugar makers around the state, adopted this technology as a means to save energy, and dollars, while processing higher volumes of sap. The technology has allowed his business, and the sugar industry around Vermont, to expand to meet rising demand. New global demand, value added products, and uses for syrup have helped fuel the industry which employs rural residents like Ronnie and preserves Vermont's working landscape.

Obligation Amount:	\$16,836
Date of Obligation:	August, 2015
Congressional District:	Representative Welch, At large; Senators Leahy and Welch
Demographics:	Lamoille County, VT
Impact:	The Rural Energy for America Program grant helps Ronnie Leroux's rural business conserve energy and grow.
