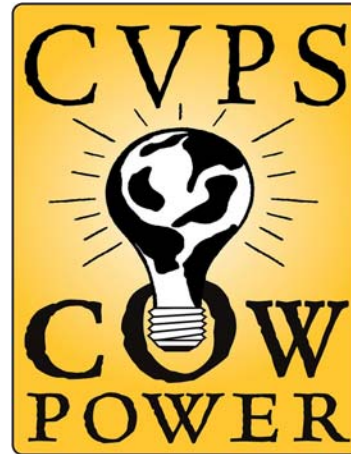




**Central Vermont Public Service**

ENERGIZING VERMONT FOR 75 YEARS



# Choosing to Make a Difference



**David J. Dunn**

[ddunn@cvps.com](mailto:ddunn@cvps.com)

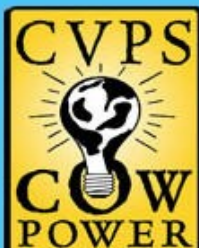
[www.cvps.com/cowpower/](http://www.cvps.com/cowpower/)

802-747-5681



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*providing renewable energy one cow at a time*

## LINKING FARMS, RENEWABLES & CUSTOMERS

Central Vermont Public Service customers who want to support renewable energy and Vermont dairy farms have a new energy choice – CVPS Cow Power™. Cow Power customers help support Vermont dairy farms with generators that run on methane from cow manure, renewable generation in the region, or incentives to farmers to get into the business.



CVPS Home | Copyright 2006 Central Vermont Public Service | 77 Grove St., Rutland, Vt. 05701 | Customer Information 800-649-2877 | Contact Cow Power



Central Vermont Public Service developed a two-pronged strategy to create a new economic model for a sustainable renewable energy supply:

- **The CVPS Renewable Development Fund**

Provides farmers with incentives to produce a renewable energy supply through anaerobic digestion of agricultural products, bi-products or wastes.

- **The CVPS Cow Power™ Tariff**

The Tariff offers CV retail customers a renewable option so they can “choose” energy generated by Vermont farms.





## CVPS Renewable Development Fund

Since 2004:

- **\$715,000** from the Fund was donated to further the goals of **Vermont's Solar and Small Wind Incentive Program** at VEIC in Burlington.
- The balance of the Fund **\$1,510,000** is being used to help farms develop new CVPS Cow Power™ projects.
- \$50,000 is being used over 3 years by CVPS to market the Cow Power™ tariff to new customers.





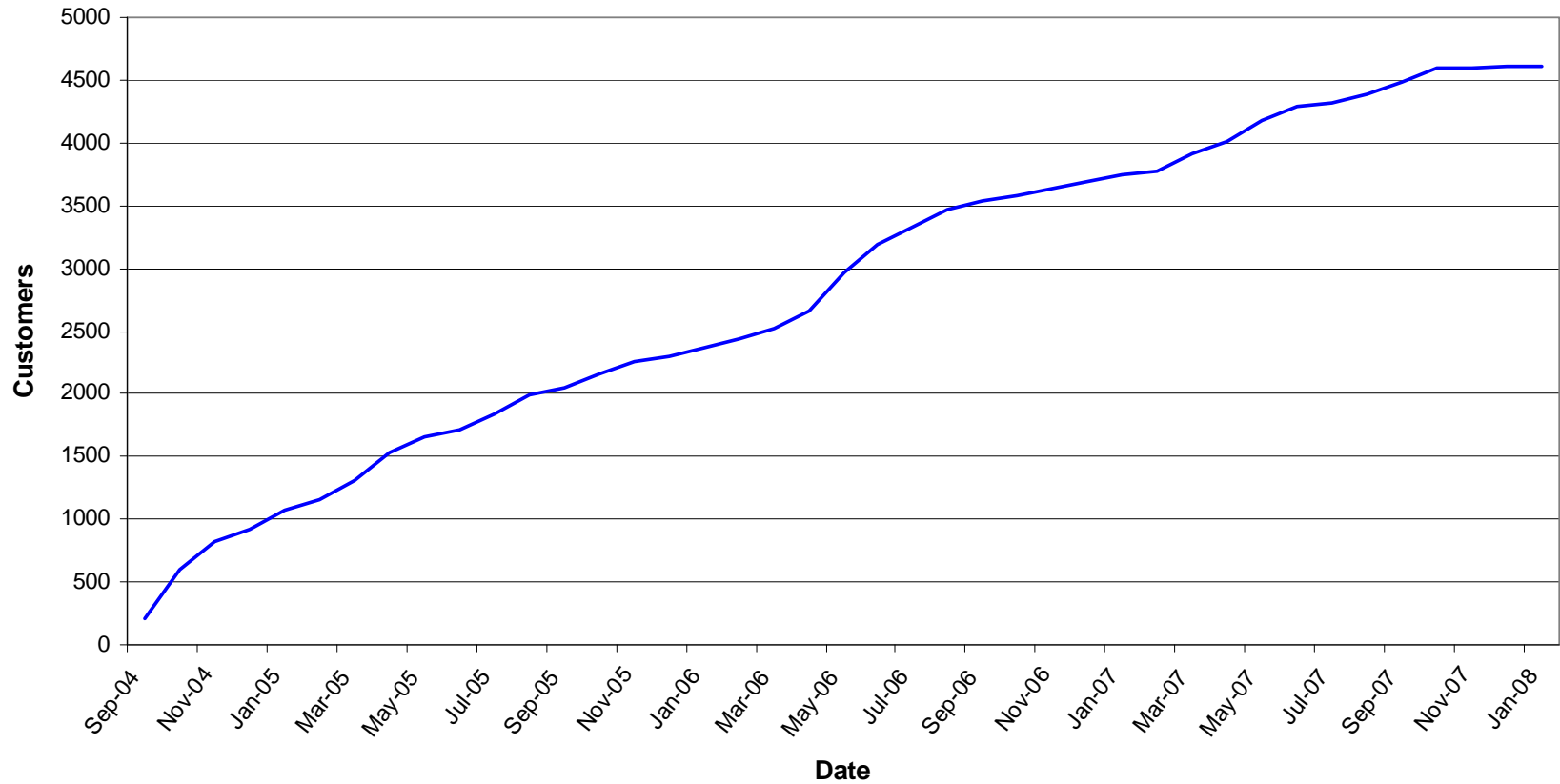
## CVPS Cow Power™ Tariff

- CVPS purchases electric output at 95% of the Locational Marginal Price (LMP).
- CVPS retail customers purchase **all** renewable attributes (RECs, carbon credits, methane destruction, etc.) from farm generators.
- To date, over 4,600 customers choose Cow Power™ paying a \$0.04/kWh premium on their electric bill for these renewable attributes. (Residential Rate \$0.119)
- 100% of the premium payment goes to the farm
- Retail customers can choose 100%, 50% or 25% of their electricity under the new Tariff.



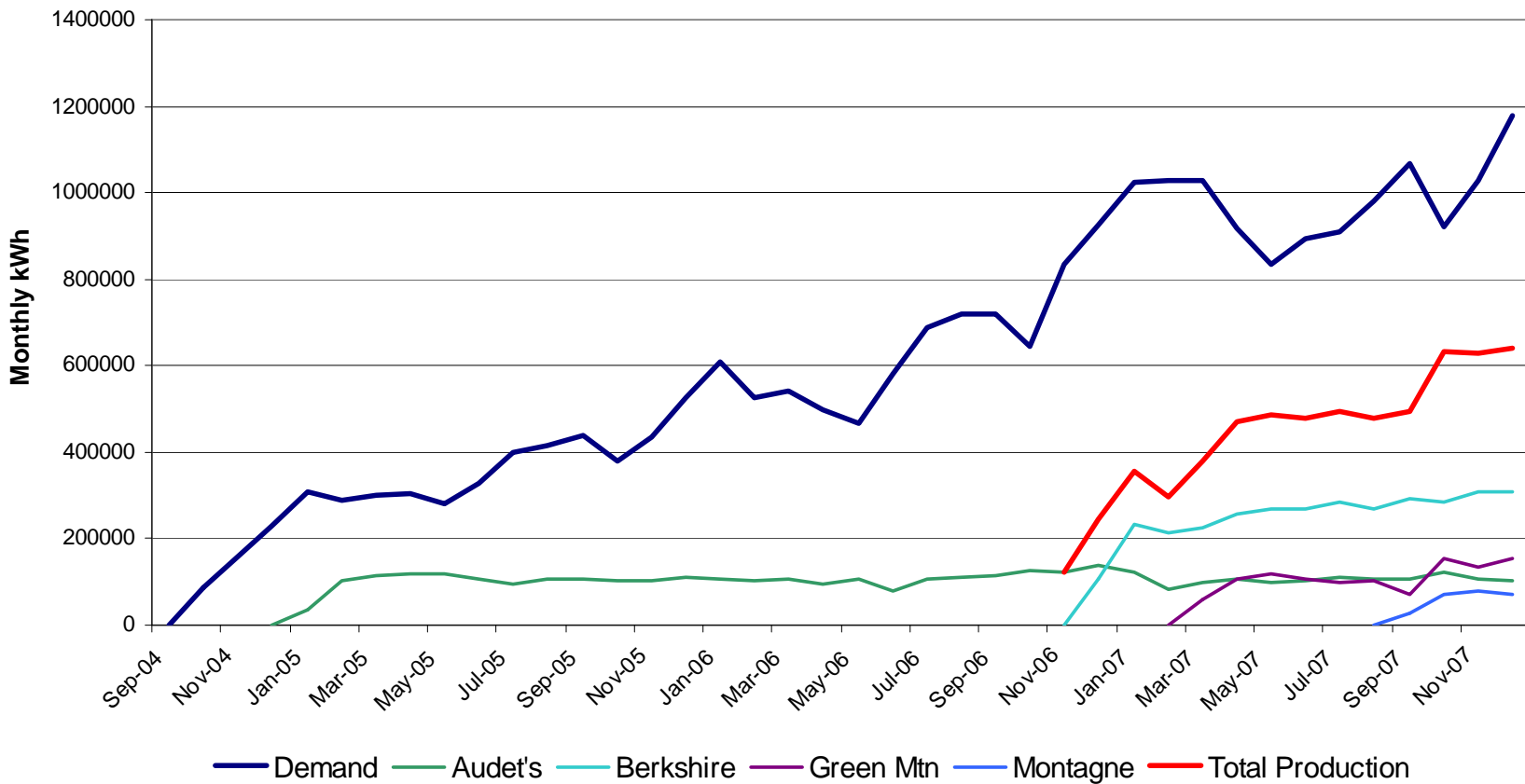


## CVPS Cow Power™ Customer Enrollment





## CVPS Cow Power™ Production vs. Demand





## Why focus on animal waste?

- The air and water-quality issues associated with animal waste management can be significant.
- Anaerobic treatment of waste can significantly reduce odor and certain water quality impacts.
- Methane from un-digested liquid manure storage is otherwise released into the atmosphere. Methane is a greenhouse gas ~21 times more effective than Carbon Dioxide at trapping heat.
- Farm generators are likely to raise few concerns from neighbors. These generators integrate well into the farm landscape.







## Benefits to Farmers

- Provides a new revenue stream, improving farm profitability while preserving a working landscape. (average **\$0.065/kWh** through December 2007 plus **\$0.04/kWh** premium)
- Use of digested solids as a replacement for purchased animal bedding (annual savings **\$80,000- \$120,000**)
- Waste Heat offsets fuel costs for hot water needs in dairy. (Annual fuel oil bill savings **\$13,000 - \$15,000**)
- Reduced Odor, pathogens and weed seeds
- Ability to ship nutrients off farm with compost sales





## The Partnership Model

- Significant Grants are necessary and allow a public to share in the success of these projects. Tertiary benefits such as reduced farm odor, weed seed destruction show societal benefits not typical of other power generation.
- Farm Bill Section 9006 Grants were imperative, even in Vermont where grants also include CVPS Renewable Development Fund, Vermont Clean Energy Development Fund, Agency of Ag Best Management Practices.





## Environmental Benefits

- Increases reliance on new, local renewable energy production.
- Carbon dioxide is plant-based not coal, gas or oil.
- Reduces the biochemical oxygen demand (BOD) of digested animal waste. Somewhat reducing the danger for aquatic animals in the event of unexpected runoff.
- Pathogen destruction in liquid portion





## **Environmental Benefits (Continued)**

**The reduced methane emissions from manure storage on four participating farms produce an annual environmental benefit equivalent to removing 18,300 metric tons of carbon dioxide from the air. Equal to 93 rail cars of coal not burned or a 15,300 acre pine forest's ability to absorb CO<sub>2</sub>, or 3,970 cars removed from the highway or over 42,600 barrels of oil.**





## Electric System Benefits

- CVPS gained tremendous knowledge about the interconnection and system protection of remote generation on a rural distribution system.
- First time in Vermont retail customers can influence utility power supply choices by voting for Cow Power™.
- Cow Power™ generation units operate at high capacity factor (~ 80%) adding reliability and diversity to the power supply. Blue Spruce has been on-line 95% since January 2005.





## Community Economic Development

- Stimulate public interest in the farm and tours
- Future partnerships for diverting organic substrates
- Worldwide press for project,
- Jobs created:
  - Concrete, electrical, plumbing and construction
  - Construction Management/GC
  - Ongoing system maintenance
  - Utility line crews
  - Engineering
  - Legal and permitting
- Utility Recognition/Awards





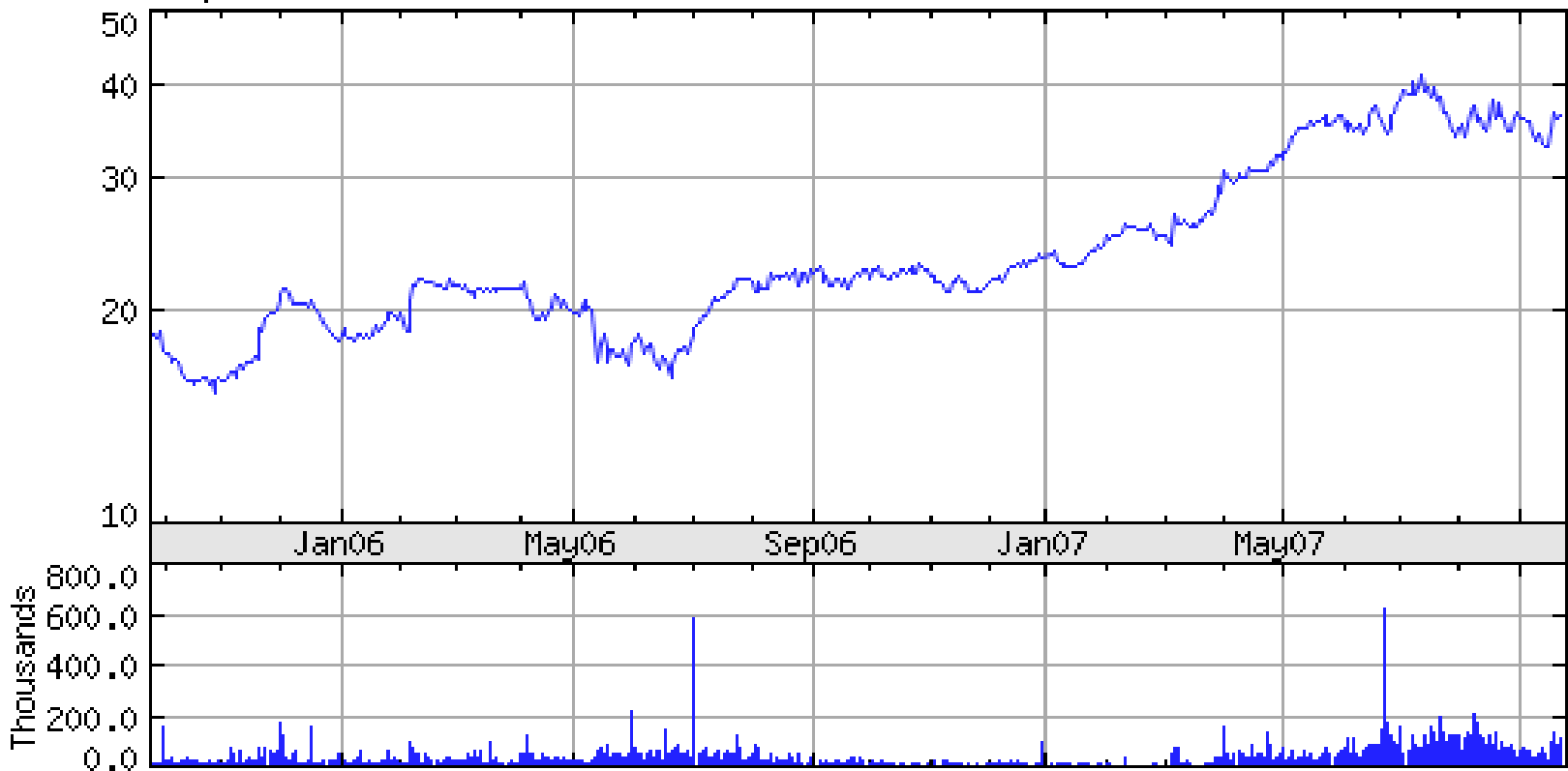
# Central Vermont Public Service

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CENTRAL VERMONT PUB SVC  
as of 21-Sep-2007

Splits: ▼



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