

Fish Farmers Reduce Project Costs by Qualifying for USDA Grants and Solar Tax Credits

The In-Situ® pond management system reduces energy expenses and operating costs

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Introduction

Fish farmers are turning to automated pond management systems to improve efficiency and profitability. The In-Situ® aquaculture system includes aeration controllers and wireless, solar-powered dissolved oxygen (DO) monitoring buoys. The In-Situ aquaculture system reduces energy expenses and operating costs while automating DO management on your fish farm. The system continuously monitors pond oxygen levels and automatically runs aerators only when necessary. The In-Situ aquaculture management system:

- Reduces energy expenses by aerating ponds only when necessary
- Qualifies for significant USDA-Rural Development grant funds and solar tax credits
- Provides real-time feedback on pond health for improved risk management
- Eliminates DO sensor calibration for an entire season
- Minimizes maintenance
- Reduces fuel costs and vehicle wear
- Practically eliminates the need for manual DO checks
- Consistently controls DO levels, thus improving feed conversion ratios, minimizing fish stress, and reducing disease and mortality



Figure 1. The In-Situ aquaculture system reduces energy expenses and operating costs while automating DO management. Additionally, farmers minimize risks and maximize efficiency.

USDA-Rural Development Grants Reduce Project Costs

The U.S. Department of Agriculture offers grants for installing Renewable Energy Systems and for making Energy Efficiency Improvements. Energy Efficiency Improvements are “any improvements to a facility, building, or process that reduces energy consumption.” Only costs of eligible improvements are covered by a grant. The In-Situ® oxygen monitoring buoy and aeration control system qualifies as an eligible improvement when applying for an Energy Efficiency Improvement grant.

The program is designed for farmers, ranchers, and small rural businesses that can demonstrate financial need. Agricultural producers who gain 50% or more of their gross income from agricultural operations are eligible.

Energy Efficiency Improvement grant funds may be used to pay 25% of the eligible project costs, with a minimum grant request of \$1,500 (total project cost of \$6,000) and maximum grant request of \$250,000. Projects with total eligible costs of less than \$80,000 receive priority for funding. Projects costing less than \$200,000 are given the next level of priority, while projects exceeding \$200,000 receive lowest priority.

USDA-Rural Development Grant Application Process

1. Learn about USDA Rural Development grants by visiting the USDA web site (http://www.rurdev.usda.gov/BCP_ReapResEei.html).
2. Contact your Rural Development State office to get started (call 1-800-670-6553 or visit http://www.rurdev.usda.gov/recd_map.html).
3. Complete the application by working with the USDA or by contacting Ag Energy Resources, LLC (AER).
 - AER will assist with the grant application process.
 - Between 2003 and 2012, AER assisted more than 300 agricultural producers in Mississippi and secured REAP grants in excess of \$12 million for Energy Efficiency Improvements.
4. To work with AER, contact Bennie Hutchins at 601-748-2622 or at bennieh@comcast.net. Mr. Hutchins will:
 - Send an application package and instructions.
 - Help you complete the grant application package. The application process may take at least 30 days.
5. Charge you only if you receive grant funding.
5. Submit your application to the USDA Rural Business-Cooperative Service (RBCS) state office for review and approval. Applications for REAP energy grants go through a competitive process and final approval is based on how your application competes against others within your state.
6. Confirm receipt by RBCS of your grant application.
7. Begin purchasing and installing your Energy Efficiency Improvement system.
8. Reminder – You may begin work as soon as RBCS receives your application, however, any expenses that you incur prior to funding approval are at your own risk. **Approval is not guaranteed and final word of funding status may not be received until two or three months after submitting your application.**



Figure 2. Automated aeration control optimizes oxygen levels, while reducing energy consumption. Yields can be improved with continuous oxygen monitoring.

Solar Tax Credits Further Reduce Project Costs

On October 3, 2008, the President signed the Emergency Economic Stabilization Act of 2008 into law (P.L. 110-343). This legislation contains several tax incentives designed to encourage investment in solar energy, including eight-year extensions of the section 48 Business Solar Investment Tax Credit (ITC). The ITC (IR Code §48) is a bill that extends the 30% ITC for solar energy property for eight years through December 31, 2016.

These federal tax credits can reduce the cost of commercially owned solar energy systems. The tax credit applies only to the solar portion of the buoy. In-Situ® has determined the cost reduction to be approximately 45% of the overall cost of a buoy. For example, if a buoy costs \$2,800, the credit is calculated by factoring in the ITC and the applicable portion of the aquaculture buoy. The tax credit effectively reduces the buoy cost by \$378 ($\$2,800 * 30\% \text{ ITC} * 45\% = \378).

Other state and local tax credits may apply. In the some states, the combination can significantly reduce the after tax cost of a solar system. For more information, visit the U.S. Department of Energy (DOE) web site (<http://www.energy.gov/additionaltaxbreaks.htm>) and the DSIRE web site (<http://www.dsireusa.org/>). DSIRE is funded by the DOE and offers comprehensive information on state, local, utility, and federal incentives.



Figure 3. The solar tax credit applies only to the solar portion of the In-Situ aquaculture buoy.

Automated DO Monitoring and Aeration Control Saves Energy

When Mississippi State University researchers compared manual and automated methods of monitoring DO in fish ponds, they found that automated DO monitoring and aeration control offered many benefits to the fish farmer (Fortune, et al. 2007). If aerators are activated only when DO decreases below a desired level, a fish farmer can reduce energy and night labor expenses.

The following examples make assumptions based on data collected by fish farmers who are using the In-Situ aquaculture system. In general, a 20-pond farm requires 20 buoys, 40 aerators (two 10-hp aerators per pond), five aerator controllers, and host computer software. Each farm must be surveyed to determine the need for repeaters and additional equipment.

- **Energy savings** – By automating aeration control, farmers generally see energy savings of at least 25% and often savings of 30 to 35%. References are available upon request.
- **Labor savings** – If manual aeration control is used, the night crew generally checks ponds every two hours between 8 p.m. and 6 a.m. Often, farmers also check ponds early evening and late morning. Many farmers check ponds six to eight times per day. With automation, the only necessary checks are for visual inspection of unusual problems (e.g., aerator problems). The labor hours freed up can be eliminated or applied to other farming tasks. Staffing requirements can be reduced by 50%.
- **Mileage** – A farmer typically drives 10 miles per trip on a 20-pond farm. For 2013, the standard mileage rate is \$0.565/mile.
- **Vehicle savings** – A typical farmer can cut vehicle costs by 50% when they switch to automated DO monitoring and aeration control.

Summary

You can realize significant savings by switching to an automated system and qualifying for USDA grant funds and solar tax credits (see Table 1). Call the In-Situ Aquaculture team and learn how to minimize risks, maximize efficiency, and save money.

Annual Costs	Manual System	Automated System	Savings
Energy	\$60,849	\$42,594	\$18,254
Vehicle	\$8,000	\$4,000	\$4,000
Labor	\$16,000	\$8,000	\$8,000
Maintenance	\$1,700	\$1,190	\$510
Total Cost	\$86,549	\$55,784	\$30,764

Table 1. Savings based on a typical 20-pond system

Notes:



For more information, contact In-Situ Inc.

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