

## SUBGROUP MEMBERS

DSCR • EPA Region III • Hopewell Cogeneration • The Sustainability Park • US Army • VA Clean Cities • VA Department of Environmental Quality • VA Department of Mines, Minerals, and Energy • VA Port Authority • VA Sustainable Building Network • Wal-Mart

“Due to partners’ interest in improving energy activities at their organizations, four subgroups were created so that we can learn about and test alternative energy sources and improve our energy conservation and efficiency.”

**Jayson Scadden,**  
Wal-Mart

## BACKGROUND

V-REMS partners have formed four subgroups: Energy Audits, Biofuels, Green Building, and an Energy Outreach and Education Clearinghouse, to address energy-related issues that are critical today.

## AUDITS

### GOAL

To obtain quick and easy energy and cost savings results through the use of audit assessments.

### Audits Show Big Results

- ◆ Cost saving benefits from energy audits can be seen as soon as 1-2 years after adjustments are made.
- ◆ DMME reports that Across the Commonwealth, over \$11 million in energy savings have been realized annually.



Partners gather at the May Quarterly Meeting to collaborate on energy issues relating to their organizations

### THE CHALLENGE:

#### *Rising Cost of Energy and the Need for Conservation*

As the price of electricity steadily increases, partners are driven to increase their energy efficiency and reduce consumption. New state regulations including E.O. 48 require state V-REMS partners to monitor and report on energy conservation progress.

### THE SOLUTION:

#### *V-REMS Partners Conduct Energy Audits to Conserve Energy and Save Money*

V-REMS partners are conducting energy savings performance surveys, the results of which provide suggestions as to how organizations can make efficiency improvements. The results help partners make more informed decisions about changes ranging from simple thermostat adjustments to asset modifications like replacing inefficient HVAC systems with more efficient technology.

## ACTIVITIES AND ACCOMPLISHMENTS

- ◆V-REMS partners have provided financial support, data, and speakers to the Eastern Virginia Energy Conservation Conference which will be held at Old Dominion University in Fall 2008. For conference information, visit [www.evec2008.com](http://www.evec2008.com).
- ◆After its energy audit with Johnson Controls, Fort Eustis shared their results with the partnership. Other partners use this information as they explore ways to jumpstart their own baseline audits and improve energy efficiency.
- ◆Fort A.P. Hill conducted an energy awareness and conservation assessment; the institution expects cost savings benefits from their changes within a 1-2 year payback period! Other V-REMS partners can leverage the lessons learned by Fort A.P. Hill to achieve similar cost saving benefits.
- ◆Wal-Mart has applied the V-REMS process to its Greening State Capitols Initiative, as it partners with 20 states, including Virginia, to perform energy audits in state capitol complexes. Wal-Mart will give partners the opportunity to learn best practices from state capitol audits. For more information, visit <http://walmartstores.com/FactsNews/NewsRoom/8270.aspx>.

### ENERGY EFFICIENCY RESULTS

VA DEQ has met 13% of its goal under EO 48, reducing GHG emissions equivalent to 60,783 lbs. of CO<sub>2</sub>. Achieving 25% of its EO48 goal, Old Dominion University has avoided emitting GHGs equivalent to 4,508,041 lbs. of CO<sub>2</sub>. Virginia Tech has already reduced GHG emissions equivalent to 707,665 lbs. of CO<sub>2</sub> after meeting just 1% of its EO48 goal. These three partners have collectively reduced conventional fuel costs by \$210,115.00.

“DMME is working with V-REMS partners to develop sustainable energy management programs. An important first step in this process is a baseline energy survey or audit to understand current energy consumption and where there are immediate opportunities to harvest low hanging fruit.”

**Barbara Simcoe,** VA DMME

# V - REMS

## BIOFUELS

### GOAL

To pursue pilot biofuel projects in order to find environmentally friendly, alternative energy sources that can be used in everyday operations.

“V-REMS has created a forum for collaboration on biofuel projects. The Sustainability Park is working with partners DSCR and Hopewell Cogeneration to test B-20 and biodiesel in its boilers.”

Harry Gregori, The Sustainability Park



Members of the Biofuels Subgroup discuss pilot programs for testing biofuel efficiency

### THE CHALLENGE:

#### *Looking for Alternative Energy Sources*

V-REMS partners want to establish a better understanding of where and how different fuels can be used for energy without detrimental impact to their activities, while promoting energy savings and environmental gains. Partners are faced with the challenge of determining how biofuels will work in their operations and figuring out what regulatory requirements they must meet.

### THE SOLUTION:

#### *V-REMS Partners Research New Technologies*

Partners have begun to test the use of biofuels, with the understanding that biodiesel production emits up to 75% less CO<sub>2</sub> over the entire production process than petroleum diesel. Projects ranging from growing and harvesting algae as a biofuel base to testing biodiesel in boilers and heating systems have been proposed. To support the research of new technologies, partners applied for funding from the Mid-Atlantic Biodiesel Commission.

### QUICK FACTS: Biofuels

- ◆ Biodiesel is a renewable alternative fuel produced from a wide range of used restaurant vegetable oils and animal fats.
- ◆ Pure biodiesel or a biodiesel-petroleum diesel blend can be used as fuel in diesel vehicles. Different blend ratios can achieve cost efficiency and improve cold weather performance.
- ◆ The recycled fuel is much less polluting than petroleum diesel with significantly lower emissions of particulate matter, carbon monoxide, toxic contaminants, sulfur dioxide, hydrocarbons, visible smoke, and odors (some biodiesel emissions smell like french fries!).

### ACTIVITIES AND ACCOMPLISHMENTS

- ◆ Partners made an extraordinary collaborative effort to obtain the permits required for testing biodiesel in boilers. Tests at DSCR using B20 fuel indicated that it was less polluting than normal diesel.
- ◆ Through the partnership, VA Clean Cities has made a plethora of information about biodiesel available. They have assembled a database of information regarding lessons learned about many of the issues surrounding biodiesel storage and use. There is a link to the website on the V-REMS Clearinghouse.
- ◆ The information gathered and distributed by V-REMS partners was an influencing factor in Ukrop's Supermarket plans to recycle vegetable oil from their stores for use in their delivery truck fleet.
- ◆ The partnership played an instrumental role in coordinating communication between biofuels subgroup members and regulators to improve test protocol for Hopewell Cogeneration's pilot project use of biodiesel in The Sustainability Park's boilers.

“We are excited about the possibility of working with Old Dominion University to grow and harvest algae to reduce Nitrogen and Phosphorous in our discharge and to use the algae to produce biodiesel. The V-REMS partnership's continued support for this project is greatly appreciated.”

Jeanie Grandstaff, Hopewell Regional Wastewater Treatment Facility

# V - REMS

## ENERGY OUTREACH AND EDUCATION CLEARINGHOUSE

### GOAL

To collect a comprehensive library of energy resources and promote outreach and education in Virginia and nationwide. Based on the needs of V-REMS partners, the Clearinghouse provides specific information related to subgroup activities and is available to partners and the general public.

### **THE CHALLENGE:**

*Useful Information about Energy Resources  
Scattered Around the Web*

No comprehensive forum existed for partners who were looking for specific information about an energy concept or technology. V-REMS needed to find a way to get, use, and transmit the best information available.

### ACTIVITIES AND ACCOMPLISHMENTS

◆Representatives from VA DEQ, DMME, Old Dominion University, and EPA crafted the Clearinghouse according to the V-REMS partners' ideas and requests.

◆Through the Clearinghouse, V-REMS partners collaborated with the ENERGY STAR campaign "Operation Change Out." More information about the campaign is available at [www.energystar.gov/oco](http://www.energystar.gov/oco).

◆Partners have worked collectively to answer questions submitted in the "Ask the Experts" tool. Matters such as the effectiveness of wrapping boilers with insulation and using metal halide decorative lights in parks have been addressed and the responses have been posted online for public access.

### **THE SOLUTION:**

*Creation of a Central Clearinghouse*

V-REMS partners created the Energy Outreach and Education Clearinghouse, which provides links to relevant information about today's important energy issues. Partners organized the information. Partners decided to organize the information into easy-to-navigate categories including State, Federal, Sector Specific, Department of Defense, and General and Local Resources. This innovative tool is updated regularly as partners and others submit energy-related data and information.



[http://www.vrems.org/Energy\\_Outreach\\_Education.cfm](http://www.vrems.org/Energy_Outreach_Education.cfm)

### EXPLANATION OF CLEARINGHOUSE TOOLS

★ Ask the Experts Forum (ATEF): If users cannot find an answer to their energy related question within the Clearinghouse, it can be submitted to the ATEF. The experts, V-REMS partners, will respond with helpful information to answer the inquiry. Given that V-REMS partners come from a variety of organizations and each partner has a unique background and network, it is more than likely that a partner has the information or can direct users to resources outside of the partnership.

★ Greenhouse Gas (GHG) Emissions Calculators: The Clearinghouse also lists an assortment of GHG calculators including the EPA Diesel Emissions Quantifier, a CO<sub>2</sub> Emissions Equivalency Calculator, and the WARM- Waste Reduction Model. These calculators are helpful in capturing emissions reductions as V-REMS partners complete their energy audits, evaluate the environmental benefits of using biofuels, and implement green building techniques.

# V - REMS

## GREEN BUILDING

### GOAL

To understand and successfully implement green building policies, strategies, and procedures as partners minimize their overall environmental impact and reduce energy costs. Drivers for applying green building technologies include E.O. 13423 and Virginia State E.O. 48.

### QUICK FACTS: Green Buildings

- ◆ Building operations alone contribute to 38% of the country's carbon dioxide emissions, over 12% of its water consumption, and 68% of the total electricity consumption.
- ◆ Compact development could reduce metropolitan CO<sub>2</sub> emissions by approximately 20% and could reduce transit sector emissions by 7-10%.

"Information given by the Army Corp of Engineers provides important insight on green building initiatives and strategies."

Daniele Johnson,  
Fort Lee

### THE CHALLENGE:

#### *Barriers to Green Building*

In some cases, the high initial investment of green building may be a deterrent to using these techniques. Partners are looking for ways to streamline procedures and convey information within their organization and to the public about life cycle cost savings to clarify and accelerate the green building process.

### THE SOLUTION:

#### *Leveraging V-REMS Partners Best Practices to Promote Green Building Construction*

Partners have strategized ways to increase awareness and promote green building techniques. The subgroup has accumulated information from a variety of sources and has shared it with the partnership and others. V-REMS will explore opportunities to promote green building training and expand the use of such practices.

### ACTIVITIES AND ACCOMPLISHMENTS

- ◆ Roundtable discussions were essential in gathering information that will increase opportunities for green building. Fort Eustis was able to contribute to this information as it incorporates green building design into its EMS.
- ◆ The V-REMS quarterly meeting in May 2008 was a vital forum for discussing green building policies and procedures. The United States Army Corps of Engineers (USACE) and the Office of the Assistant Chief of Staff for Installation Management (ACSIM) answered many partners' questions surrounding the initiative, allowing for easier implementation and further information transfer.
- ◆ The USACE HQ LEED Implementation Workshop in July 2008 was expanded due to partnership engagement. Partners shared their take-away messages from the training with the rest of the partnership, providing additional support for green building implementation.
- ◆ In September 2008, partners attended a Green Building Workshop to hear real life examples of green building activities, to understand how implementers overcame challenges, and to learn do-able and easily-achievable green construction ideas.

### ANTICIPATED RESULTS

- ★ Activities as simple as building rain gardens will reduce soil erosion, improve water quality, and decrease runoff pollutants.
- ★ Modifications like adjusting lighting and thermostat controls, updating HVAC systems, and replacing windows are some of the first steps partners will take as they "green" their buildings. These easy-to-achieve changes will result in significant energy and cost savings.