

Western's monthly energy efficiency and renewable energy newsletter dedicated to customer activities and sharing information on energy services.

Montana co-op borrows tools, coaches students to energy championship

Winning the America's Home Energy Education Challenge was a big victory for the students of Carter County, Mont., and Western is proud to have played a small role in the team's success through our customer Southeast Electric Cooperative.

Teaching energy awareness

The team of five schools split a prize of \$15,000 for tracking and reducing home energy use over three months. The Department of Energy created the national school competition to educate students and their families about the opportunities to save money by saving energy. Teams of third through eighth grade students worked with their science teachers and local utility companies to develop energy savings plans that reduce the amount of energy used to power their homes.

Marlene Waterland of Southeast Electric coordinated the program for Alzada Elementary School,



Southeast Electric Member Services Rep. Marlene Waterland shows students from Hawks Home School the different types of light bulbs on the lighting display, borrowed from Western's Equipment Loan Program. (Photo by Southeast Electric Cooperative)

Carter County High School, Ekalaka Elementary School, Hammond School and Hawks Home School. Using a lighting efficiency display and infrared cameras from Western's Equipment Loan Program, the member services representative introduced students to different ways of thinking about energy waste and efficiency. "The displays are excellent teaching tools that we couldn't afford otherwise," Waterland said.

"It was great to be able to help Southeast Electric Cooperative and Marlene inspire these kids to apply

their math and science skills to a real-life problem—how to save money by using energy efficiently at home," said Equipment Loan Manager Gary Hoffmann.

Showing and telling

One of Western's most popular educational tools, the lighting display shows how new technology can save energy using equipment everyone has in their homes—light bulbs. The new lighting display incorporates lamps that may still be unfamiliar to

See MONTANA CO-OP, page 2

What's inside

Landfill gas project..... 3

Utility Energy Forum wrap-up 4

Technology Spotlight..... 6

Website of the month 7

Montana co-op,

from page 1

consumers. “A lot of our customers are still trying to adjust to compact fluorescent lights (CFLs),” Waterland admitted. “It helps for them to see the different Kelvin ratings, and learn that they can buy brighter lights.”

The long-lasting cold cathode bulb, which is designed to be used outdoors in cold temperatures, also peaked student interest. “They could see how it could be useful for saving energy specifically in Montana,” said Waterland.

Southeast Electric Cooperative frequently borrows Western’s IR cameras to perform free home energy audits for its customers. Using the tool to teach 7th and 8th graders about energy losses gave Waterland the chance to do a “commercial” for Southeast’s free home energy audit program. She also took the camera to another school in the utility’s territory that wasn’t participating in the Challenge. “I try to schedule as many appointments and events as possible when I have Western equipment checked out,” she explained.

She walked the students of the small country school through a preliminary energy audit, showing

them how the camera worked and what to look for. During the audit, the students discovered that a furnace filter had not been properly installed, so they were able to correct a problem.

All talents welcomed

The students of Carter County School District turned out to be quick—and creative—studies. They talked to their family members about energy- and money-saving steps they could take, including turning off the lights when leaving the room and running the laundry machine with cooler water and full loads. In an agricultural community, using timers for engine block heaters for tractors turned out to be a big saver.

It wasn’t only what the students did, but how they did it that earned them the award. Some students went right for the dollars and cents, Waterland recalled. “Southeast publishes fact sheets that give the monthly costs for running appliances, and they put those to good use,” she said. “You could see how the project pushed them to apply their math skills.”

Others applied their imagination to energy planning, with one sixth grade class writing fiction stories about saving energy. The national competition included a poster contest that gave artistically inclined students a way to encourage their families and communities to improve the energy efficiency of their homes. Southeast awarded its own prize of \$50 for the best local poster.

Local buy-in

To sharpen the local competition, Southeast also offered a \$100 prize to the family that saved the most energy during the competition. “Of the 49

students participating, 20 families reduced their energy use, and the winner saved 41 percent,” Waterland said. “The family told us that their daughter ran around the house every night unplugging everything.”

Winning America’s Home Energy Education Challenge required focus, teamwork and long hours—and not just from the students. “It was demanding competition and the teachers were really good at keeping everyone on task,” said Waterland.

Waterland considers the 177 hours she spent coordinating the schools’ participation a worthwhile investment. “Southeast is a relatively small utility—only 900 customers and 2,000 meters—and we all support the community,” she explained. “Winning this competition is a source of pride for everyone.”

But the prize is more than just hometown pride, or even \$15,000. It’s seeing students get excited about using math and science, and discovering creative ways to apply new skills. It’s teaching young people and their families to treat energy as the valuable resource to be used thoughtfully. And it’s preparing tomorrow’s consumers to work as partners with their utilities. “A student called me recently to find out whether it costs more to run a computer or a toaster, so they are still exploring how to save energy,” Waterland said. “There will be another competition, and these kids will be ready for it.”

Western customers can borrow educational displays—or other tools—from our Equipment Loan Program free of charge. You pay only for return shipping. Reserve your equipment online, or call Gary Hoffmann at 720-962-7420. ⚡

Energy Services Bulletin

The Energy Services Bulletin is published by Western Area Power Administration for its power customers. The mailing address is Western Area Power Administration, P.O. Box 281213, Lakewood, CO 80228-8213; telephone (720) 962-7508.

The mention of any service, product, or technology does not constitute an endorsement of same and Western, the Department of Energy, or the United States Government cannot be held responsible or liable for use thereof.

Editor: Kevon Storie

Designer: Grant Kuhn

For links to more resources,
visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb1.aspx>

Landfill gas project helps MEAN, customers meet renewables goals

The Municipal Energy Agency of Nebraska (MEAN) recently signed a power purchase agreement that will supply 11 of its wholesale power customers with renewable energy credits (RECs) from a landfill gas-fueled project near Mitchellville, Iowa.

The Metro Park East Landfill waste-to-energy operation will generate six megawatts (MW) of base load renewable electricity when it goes online later this year. WM Renewable Energy, LLC, a division of Waste Management, Inc., is building, owning and operating the project.

The RECs will go to the municipal utilities of Fountain, Colo.; Carlisle, Indianola, Sargeant Bluff and Waverly, Iowa; and Ansley, Burwell, Callaway, Grant, Oxford and Stuart, Neb. MEAN will add the unallocated portion of the attributes to its overall renewable energy portfolio, which is 9 percent of its total electric generating capacity.

Good investment

Nebraska doesn't have a state renewable energy standard, and the standards in Iowa and Colorado don't apply to the small municipalities participating in the purchase. However, MEAN considered the opportunity to acquire the RECs too good to pass up. "The landfill project offers a way to diversify our renewable portfolio with a base-load resource that is comparable in cost to our wind resources," explained MEAN Executive Director Gary Stauffer. "This purchase also better positions us to meet any possible future emissions regulations."

That kind of forward thinking appealed to MEAN's power customers, who also have their own sustainability goals. "Since many proposals for Federal or state renewables standards range between 10 and 20 percent,



Waste Management's waste-to-energy facilities, like this plant in Saugus, Mass., produce enough electricity annually to power 1.2 million homes. Municipal Energy Agency of Nebraska will purchase 6 MW from a new plant the company is building near Mitchellville, Iowa. (Photo by Wheelabrator Technologies, Inc.)

this REC purchase puts Indianola in a good position to meet future legislative mandates," noted Todd Kielkopf, general manager of Indianola Municipal Utilities. "Our resource mix is now at 11.5 percent renewables, including our purchases from MEAN's wind resource pool and its conventional pool, which has small amounts of hydro, wind and landfill gas."

Not only does waste-to-energy generation add significantly to Indianola's renewable portfolio, it prevents releasing the potent greenhouse gas methane into the atmosphere. That pleases Indianola citizens who are concerned now about the utility's emissions footprint.

Quick decision

Kielkopf brought the project to the MEAN board's attention in 2010 after receiving a call from the Waste Management project manager. "They were looking for a partner, so I put them in touch with MEAN," he recalled. "Then I just kept inquiring about the economics of the project."

As a member of MEAN's power supply committee and board, Kielkopf continued to support the project. "We conducted a whole-town energy

study in the summer of 2010 with the Iowa Office of Energy Independence to evaluate the most effective way to spend the community's sustainability funds," he explained, "and participating in the landfill gas project offered the greatest impact."

After discussing the project with waste-to-energy experts, the board agreed that it was a good fit for its members. By November, MEAN was in negotiations for the purchase of six megawatts.

Proven technology

Of course, it helps all the participating utilities that Metro Park East Landfill will be providing power that is affordable, as well as clean. Indianola's anticipated increase in cost per kilowatt-hour (kWh) over the next 20 years makes the landfill generation more cost effective than adding new conventional generation. In the near term, the project will only increase the municipality's retail rate by nearly 3 percent compared to purchasing from MEAN's conventional pool—a rate the utility's board can support, said Kielkopf.

See LANDFILL GAS PROJECT, page 8

Communication is elephant in room at Utility Energy Forum

If there was one overriding theme at the 32nd annual Utility Energy Forum, it was that communication may be utilities' most valuable tool for weathering, adapting to and ultimately thriving in these unsettled times.

Spreading the word to policy and decision makers about the value of energy efficiency; motivating customers to change their behavior; enlisting business partners; training contractors, maintenance workers and building occupants to properly install and use energy-saving equipment—communication seemed to be at the heart of every presentation and panel discussion.

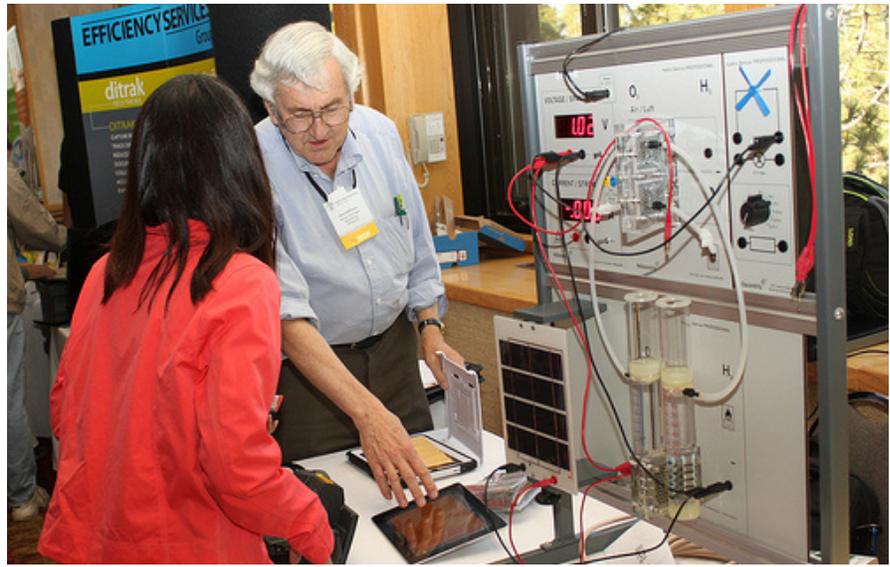
The most direct statement of the issue came from Mike Weedall, senior advisor to E-Source. “The importance of communication now trumps everything,” he told attendees. “We have to learn how to talk to customers in a more effective and productive manner.”

Challenges abound

Weedall was part of the Policy and Strategic View panel, which laid out the issues utilities must face during the opening day of the conference. While speakers focused their discussions on California and Nevada, most of their observations applied to power providers across the country.

Among the concerns is a political climate of extreme polarization where regulatory incentives for utilities to build efficiency into their business models can't gain a foothold. Cheap natural gas is making such incentives even less likely, a trend that will only deepen if the environmental issues surrounding fracking are resolved.

Another side effect of the natural gas boom is that consumers are less willing to pay the premium for renewables—from their utilities, that is. Weedall pointed out that advances in renewable and distributed-generation



Equipment Loan Manager Gary Hoffmann shows off Western's new fuel cell display at the Utility Energy Forum. Raising energy awareness and educating consumers and policy makers about efficiency were hot topics at this year's event. Read more. (Photo by Randy Martin, R. L. Martin & Associates, Inc.)

(DG) technologies are prompting more people to consider going off-grid. More than one speaker suggested that utilities' relationships with their ratepayers are at an all-time low.

Efficiency a proven winner

Fortunately, utilities have a low-cost tool to control their load, regain consumer trust and, as a bonus, stimulate economic growth. California has shown over and over again that it works.

Prompted by the Oil Embargo of the early 1970s, Governor Ronald Reagan signed a bill creating the California Energy Commission (CEC). Today, energy efficiency continues to be the most successful part of the state's energy policy. Statistics from the Energy Information Administration (EIA) and National Resource Defense Council (NRDC) show that California has the ninth highest electric rates in the country, but the eighth lowest monthly electric bills. The state's per capita electricity consumption has remained flat over the last 30 years.

The California energy crisis of 2000

spurred the CEC to enact stronger efficiency standards, yielding even greater energy savings, as well as economic benefits. For the first time, the state's projected absolute demand will remain flat going forward. Siddhartha Oza of NRDC pointed out that, since 2006, every dollar publicly owned utilities spent on efficiency returned three dollars. In 2011 alone, venture capital has invested half a billion dollars in clean technology in the state.

Without strong policies supporting energy efficiency, however, utilities see the savings and benefits drop sharply. Larson warned that though energy efficiency enjoys bi-partisan support, it does not have the vocal advocates that the renewables industry does. He advised attendees to pay attention to what state agencies are doing, and to make sure their legislators understand the importance of energy efficiency.

What makes customers tick?

Strong efficiency policies are great when you can get them, but most

See UTILITY ENERGY FORUM, page 5

Utility Energy Forum

from page 4

utilities have already figured out that legislation—even state and Federal rebates—won't necessarily move consumers to save energy.

Keynote speaker Suzanne Shelton gave an eye-opening presentation on what really motivates consumers to make more sustainable choices. The Shelton Group's research indicates that most people already believe their homes are efficient, and they consume energy on "auto-pilot." The key to successful behavior change programs is making an emotional and rational connection with consumers and appealing to their values.

Customers are less likely to respond to vague messages, Shelton added, like "save energy," or even "save money." Calls to action like "Set your thermostat back 5 degrees," or "Turn off the power strip" tell people how to save. Even consumers who are primarily motivated by comfort, convenience, independence and having a beautiful home (most of them) are more likely to act on a specific recommendation.

Other thoughts on motivation

Research can point utilities in the right direction, but other speakers reminded us that building successful energy-efficiency programs for 21st century consumers is a steep learning curve we are still climbing. Weedall observed that, in spite of their increasing popularity, behavioral programs can be expensive, and we don't yet know if they can deliver the peak reductions and energy savings utilities need.

On the other hand, some power providers have achieved real savings with good, old-fashioned generous



Steve Larson, past executive director with the California Energy Commission, explained that it is up to utility professionals to make sure that the next generation of energy policy makers understands the importance of energy efficiency. (Photo by Randy Martin, R. L. Martin & Associates, Inc.)

incentives. With its Whole House Rebate Program, Riverside, Calif., Public Utilities has saved more than 2 million kilowatt-hours (kWh) to date. McMinnville, Ore., Water and Light brought enough consumers into its conservation program to save 5 megawatts (MW) of electricity. "You just have to find the 'sweet spot' to make installing measures worth their while," said McMinnville Community Relations Manager Wes Thompson. "In a bad economy, that spot is 'free'."

Another "relic," the customer newsletter, helps Roseville, Calif., Electric connect with a hard-to-reach customer group. The quarterly newsletter Roseville sends to all small business customers has a "ridiculously high" readership, said Program Manager Mark Riffey. The utility's small business energy efficiency program has saved more than 2,000 kW per participant annually since launching in 2007.

Pictures worth a thousand words

Roseville's experience notwithstanding, the poster session indicated that utilities and their partner indus-

tries are ready to embrace electronic communications in all its variety.

Posters highlighted research on building automation systems and smart grid applications, as well as paperless programs to improve productivity for auditors and contractors. Western's "SmartApp" poster offered examples of three smart phone applications and suggested ways for utilities to use them.

This year, the forum tried a new "speed dating" format for the poster session, in which participants had five minutes to explain their ideas. That was certainly an exercise in getting right to the point, a skill that is increasingly valuable in the world of social media.

Stay tuned

As it always does, this year's Utility Energy Forum gave attendees plenty to think about in the coming months. Look for Energy Services Bulletin and Breaking News to explore the ideas, highlight the programs and follow the research and policy developments covered in the presentations. ⚡

For links to more resources,
visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb3.aspx>

Technology Spotlight:

Is LED commercial outdoor lighting ready for prime time?

LEDs are leading the charge in the lighting revolution with high quality lighting that can be more energy efficient and last longer than currently available technologies, and they are improving rapidly.

Many customers are vying for the distinction of being among the first to install this high-tech lighting, but LEDs are still more expensive than older lighting technologies. Does it make good economic sense to replace your existing outdoor lamps with LEDs now, or should you wait a little longer?

Advantages, disadvantages

The claims made about LEDs are compelling. High-quality products offer:

- Good color – the available color and light spectrum is expanding rapidly to include all colors of the Kelvin scale. One of the benefits of this is reduced eye fatigue and headaches when reading under an LED lamp. At present, most LED light is whiter and broader spectrum than high-pressure sodium lighting, and is as good as metal halide lighting.
- Long life – usually rated at about 50,000 hours (or about 12 years for lamps used 12 hours per day, 7 days per week). Some recent developments may extend lamp life even longer.
- Good directionality – LEDs emit light in one direction, which can limit light pollution.
- Instant on and off capability – Most competing older technologies lack this.
- Good controllability – But controls must be compatible.
- High durability – LEDs withstand vibration and cold temperatures, though not heat.



LEDs offer a quick payback in spaces where the lights are on all the time, like parking lots and parking garages. (Photos by DOE Office of Energy Efficiency and Renewable Energy)

- Dimmable – For both alternate and direct currents.

These traits make LED lighting technology well-suited for outdoor lighting applications, especially area and parking lot lighting, gas station canopy lighting and parking garage lighting. Their high run times and relatively cool conditions make LEDs make a cost effective choice for these purposes. In some parking lot applications, LEDs can provide a simple payback of around three years. The lighting industry expects LEDs to reduce energy usage in the outdoor sector by 50 percent by 2030.

The main disadvantages of LED lighting are its high initial costs, lack of documented long-term performance and inconsistent quality among brands.

Right time to buy?

Although good quality LEDs are now available, the prices are still high and the quality, pricing and product offerings are still improving rapidly. By this time next year (if not next month), the quality will be higher and the price will be lower. The U.S. Department of Energy expects that in less than a decade, LED lighting will be at least twice as efficient as it is today and cost only a quarter of the current price.

However, don't delay your purchase if it is cost-effective now. Every application is different so be sure to calculate all the options and factors before deciding. If you put off your decision for five years, chances are you will get a higher-quality product that is 50 to 100 percent more efficient and costs half as much. But because this technology should last 15 years or more, energy and dollar savings should be factored into your decision.

LEDs offer a quick payback in spaces where the lights are on all the time, like parking lots and parking garages. (Photos by DOE Office of Energy Efficiency and renewable energy)

Parking garage lighting is the one application where waiting to install LED technologies could prove costly. Unless you install occupancy controls, parking garage lights are usually on 24/7, so they will wear out sooner than LEDs in other outdoor applications. A lamp with a 50,000-hour life will need to be replaced in about six years. By that time, you will have saved significant energy and money, and you can step up to the next generation of LEDs. Also, parking garages are eligible for the commercial lighting tax deduction from the

See TECHNOLOGY SPOTLIGHT, page 8

Website of the month:

ACEEE Technical Assistance Toolkits



Program developers in state and local government agencies now have two new resources to help them achieve lasting energy savings and stimulate economic growth through energy efficiency. The American Council for an Energy Efficient Economy (ACEEE) created the State and Local Technical Assistance Toolkits, drawing on more than 30 years experience collaborating with state and local stakeholders on effective program and policy development and deployment.

Local resources

The local resources begin with energy planning, a process Energy Services heartily endorses. ACEEE supports a multi-year approach, subject to continuous improvement and provides reports that offer practical examples.

Speaking of examples, local governments are in the position to advance energy-efficient technologies and practices in the marketplace by promoting energy-efficiency in their own everyday operations. This section begins with a list of the benefits of leading by example—helpful when asking your board or city council to approve a program. Resources address public buildings and water and wastewater treatment, and include a savings calculator for local efficiency programs.

Local governments that have set up an energy-efficiency program for their own operations can take the next step of establishing policies and programs to help residents and businesses improve their efficiency. On this page, visitors will find case studies

of community energy plans, along with samples of building codes and transportation initiatives and other local projects.

State level

The state toolkit offers similar resources to the local version but aimed at different audiences. State governments can also lead by example, but state agencies will be working with different partners for more far-reaching results. Whereas local programs can only approach citizens and businessowners, state policy-makers can target entire communities, and may use their legislative authority to advance energy efficiency in numerous sectors.

Utility policy can have a great impact on energy use within a state, so the toolkit contains resources to help stakeholders work effectively with their utility regulatory commissions. The reports on this page explore utility efficiency programs incentives, promoting combined-heat-and-power projects and Energy Efficiency Resource Standards (EERS).

Evaluation, always critical for maintaining public support for energy-efficiency programs, is even more important at the state level. The best-practice resources on this page will help stakeholders pick the appropriate evaluation, measurement and verification method to guide future program development and implementation.

Money matters

Up-front costs for energy-efficiency projects are a major barrier for both state and local programs, so toolkit

resources suggest several strategies for financing energy efficiency. Two mechanisms are specifically examined—on-bill financing and Property Assessed Clean Energy (PACE) financing.

On-bill financing (OBF) achieves higher energy savings from building efficiency programs by assisting property owners with financing for the upfront costs of improvements. With access to financing, customers are more able to participate in other energy-efficiency programs. However, such programs tend to be labor intensive for utilities, and complicated for multiple fuel providers.

First introduced in Berkeley, Calif., in 2008, PACE districts issue loans to residential and commercial property owners to retrofit energy-efficiency measures or install small renewable energy systems. Owners make loan payments through an assessment added to the property tax on the building, usually with a 20-year payoff period. The economic downturn caused many states to discontinue their programs, but PACE is starting to make a comeback, as property owners turn to energy-efficiency as a way to lower their operating costs.

Work in progress

The toolkits will continue to evolve as ACEEE identifies additional policy and program needs at the state and local level. That gives users the opportunity to play a part in building the resource—contact ACEEE with suggestions for more topics and tools. ⚡

For links to more resources,
visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb5.aspx>

Technology Spotlight

from page 6

Federal government today.

Here is the bottom line: You have to do the calculations so you can base your decision on real numbers. If you need to purchase lighting now, your electric rate is high, your operating hours long, you can take advantage of controls and/or your utility offers an attractive incentive, consider installing LEDs.

Advice for potential buyers

Search for up-to-date information. LED technology is improving so rapidly that virtually anything you see in print is already outdated. Search online for the latest information on new LED products, control options, performance, cost calculations, incentives and codes. For parking lots and parking garages, consider controls to dim or turn off lights during the many unoccupied hours.

Realize that testing results for the newest products may not yet be

available. By the time the manufacturer tests a product and publishes the results, the product will likely have been replaced by products that have just entered the market.

Compare the cost and performance of the LED system you are interested in with the best available traditional technologies, such as ceramic metal halide, high-efficiency plasma and induction lighting. The LED system needs to be better and more cost-effective than the next best alternative.

Understand the warranty and how problems will be handled. Will fixes be available with the fixture in place? Will parts be available after the warranty period? The rated life of an LED lamp does not include additional components like fixtures, wiring solders and drivers, which are all more likely to fail earlier than the LED chip.

Select from a list of approved products. There are many good and bad products on the market, so lists from utilities and the DesignLights Consortium can be helpful.

Install a few LED products in your application before committing to a large purchase to make sure they provide the light you need.

Unbiased information sources

- The DesignLights Consortium Qualified Products List offers 62 brands and almost 7,000 different products for LED applications.
- U.S. Department of Energy: Solid-State Lighting
- Lighting Facts: Success with Solid State Lighting
- DesignLights Consortium: Solid State Lighting
- The Tax Incentives Assistance Project
- The LUMEN Coalition
- ENERGY STAR Lighting

Current specifications

- CBEA High-Efficiency Parking Structure Lighting Specification
- CBEA LED Site (Parking Lot) Lighting Specification ⚡

For links to more resources, visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb4.aspx>

Landfill gas project

from page 3

Methane recovery is a proven power generation technology, and the Metro Park East facility is an established project. Metro Waste Authority (MWA), Waste Management and investor-owned MidAmerican Energy partnered in 1993 to capture methane gas from the landfill to turn it into electricity. MEAN is purchasing the power

from four large engines Waste Management is adding to the site.

Landfill gas-to-energy projects currently produce more than 550 MW annually, equivalent to offsetting more than 2.2 million tons of coal. Waste Management's goal is to generate enough renewable energy from its own facilities by 2020 to power more than 2 million homes

across the country. Currently, the company's projects create enough power for approximately 1.2 million homes.

That potential suggests that this could be the beginning of a productive partnership between the utility industry and the municipal waste industry. ⚡

For links to more resources, visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb2.aspx>