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WEATHERING THE PERFECT STORM

Wikipedia: A “**perfect storm**” is an expression that describes an event where a rare combination of circumstances will aggravate a situation drastically. While in recent years, the reduction to HUD funding is not unusual, the draconian approach to the 2018 budget hampers HUD’s mission and dramatically affects its ability to assist low-income people.



As we heard recently at the National Association of Housing and Redevelopment Officials (NAHRO) Washington Conference in March, the National Low Income Housing Coalition (NLIHC) Policy Forum in April and most recently at the Rental Assistance Demonstration (RAD) Collaborative, all programs may be adversely affected by the proposed budget cuts. Public Housing and Community Development Programs including Community Development Block Grants and HOME Investment Partnerships Program are some programs most severely affected by the proposed budget cuts. RAD may also be affected; however, HUD can likely honor the 2014 contract rents, plus OCAFs. Once Congress lifts the cap, new vouchers may receive an initial rent lower than projects “funded” under the initial 185,000 units.

The proposed cuts would drastically reduce resources used to maintain the very buildings that assist some of the most vulnerable people in America’s rural, urban, and suburban communities. The budget proposed cuts to Public Housing Authorities (PHA) alone, would dramatically affect their ability to address the \$26B in capital backlog, accelerating the current inventory loss of 10,000 units every year. The repeated failure to adequately fund HUD’s public housing program has resulted in the deferment of needed repairs, and has been an impediment to proper health, safety, and facility management. The 2017 Presidential Budget requests \$1.87B in capital funding for the calendar year, far less than the estimated \$5.0B needed for 2017 and well below the \$3.5B in annually accruing capital needs. The need for capital improvements increases with the aging of the housing stock, while appropriations have dwindled. A deficit of approximately \$17B of estimated needs has accrued over the past six years. Recent media releases reflect that \$1.5B may be cut from the Capital Fund for the calendar year 2018 Budget greatly reducing the reach of the program.

UPCOMING EVENTS

- » **National Housing Conference – Solutions for Housing Communications**
April 27-28, 2017
Minneapolis, MN
- » **2017 PHADA Annual Convention & Exhibition**
April 30 – May 3, 2017
Chicago, IL
- » **2017 National Tribal Energy Summit**
May 1-3, 2017
Washington, DC
- » **Novogradac Financing Renewable Energy Tax**
May 4-5, 2017
San Francisco, CA
- » **DOE – Better Buildings Summit**
May 15-17, 2017
Washington, DC
- » **2017 NERC NAHRO Annual Conference & Exhibition**
June 25-28, 2017
Rockport, ME

The Operating Fund in Public Housing turns the lights on, pays salaries, and covers routine maintenance, etc. PHAs are struggling to manage their Public Housing Programs with heavily prorated funds. Proration is a funding reduction in a PHA's eligible funding subsidy levels, e.g., for every dollar of eligibility, a PHA may receive \$.73 based upon 2018 proposed funding levels. The estimated need to fully subsidize the Operating Fund for 2017 is \$5.46B. The 2017 Presidential Budget requests \$4.57B for the Operating Fund, an amount that provides housing authorities with about 84 percent proration of eligibility, which falls well short of what is needed to efficiently operate the Public Housing Programs. Housing authorities are working with less staff, foregoing needed maintenance projects, and trying to make the reduced funding they receive cover ever-increasing expenses. Recent media releases reflect that as much as \$600M may be cut from the Operating Fund for the calendar year 2018 Budget resulting in a 73 percent proration. Many housing authorities will find it difficult, if not impossible, to successfully operate under these conditions.

What are the viable options in the current environment? The Capital Fund in Public Housing pays for the brick and mortar capital improvements, including energy systems, e.g., boilers, roof replacements. Since traditional capital replacement programs rely on Capital Fund and Capital Fund Financing, the proposed 2018 budget will exacerbate already dismal appropriation levels.

RAD provides the greatest hope for the future of affordable housing; however, the reductions proposed in the current budget have the potential of reducing even the RAD rents by 15-20 percent for new vouchers beyond the current 185,000 units ceiling level. Combining lower RAD rents with the potential of tax reform, i.e., lower tax rates which will have the effect of reducing equity from the Low-Income Housing Tax Credit program, and some PHAs may find RAD transition difficult, if not out of reach. Lifting the RAD ceiling may provide little relief to PHAs on the waiting list if flexibility to the rent structure is not addressed.

Apollo Engineering and Solutions (AES) and Enlightened Energy Consultants (EEC) remain committed to assisting the affordable housing community to weather the storm. We offer suggestions that are strategic and hopefully uplifting.

1. Consider Energy Performance Contracting (EPCs) as a Viable Shelter During the Storm

EPCs generate cash flow. Savings can be guaranteed. Except for proration, the energy savings remain with the PHA. Excess energy and water savings can mitigate some of the impact from proration. The contracts can extend for 20 years and except for the proration in the budget, the 2018 budget is silent on HUD's EPC program. Once the storm clouds subside, a PHA with an EPC may find itself in a better position to transition to RAD. Agencies contemplating a multi-phase RAD conversion over several years can lock-in the EPC benefits into their Housing Assistance Payment (HAP) contract by undertaking and installing EPCs before the conversion takes place, provided the PHA can complete the transition within the permitted conversion timeframe. In addition, implementing an EPC prior to conversion can improve the HUD subsidy (i.e., if an add-on subsidy incentive is part of an EPC) over non-EPC RAD converted properties. The property taking advantage of an EPC can see lower operating costs, a fully-integrated energy solution, superior resident comfort, improved asset sustainability, a hedge against future utility rate increases, and better financial leverage.

2. AES and EEC Urge You to Stand Up and Be Counted

Support NLIHC, NAHRO, CLPHA, PHADA and other housing industry and community development groups asking Congress to recognize the adverse impact that decreased funding has had over the last several years and find additional dollars to fully fund affordable housing programs.

3. Be Resilient, Mentally, and Physically During This Period

A good friend of mine Eileen McDargh (<http://www.eileenmcdargh.com>) has published a series on personal and organizational resiliency. In her series, she defines "resiliency as the ability to find the inner strength to grow through a set-back, challenge or opportunity."

- a. Resiliency is **NOT** about “bouncing back.” It is about growing through.
- b. Resiliency is **NOT** about pain. It is about possibility.
- c. Resiliency is **NOT** about adversity. It is about advantage.

There are tangible benefits to Eileen’s approach:

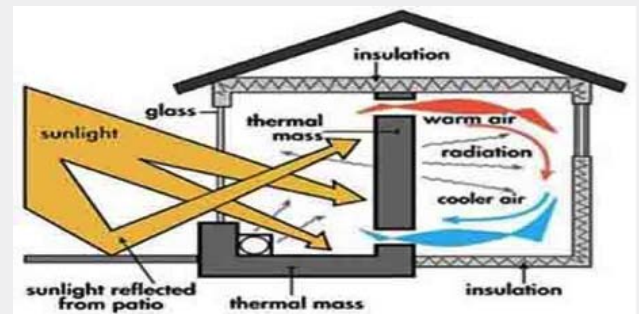
- a. Resilient organizations innovate and out-think the competition;
- b. Resilient leaders keep the best and brightest talent;
- c. Resilient living affords a life by design and not default;
- d. Resilient relationships offer harmony and authenticity.

We will get through this, together. All storm clouds, eventually, pass.

Dick Santangelo (AES), Mike Nail (EEC)

Are Passive Energy Systems Something You Should Be Considering?

Our ancestors used passive solar energy systems by building their houses out of stone or clay, which absorbed the sun’s heat during the day and stayed warm after dark, providing heat throughout the night. Some Native American communities employ straw bale construction techniques as a low-cost alternative for building highly insulating walls. Builders today are renewing their interests in passive systems to passively capture solar energy, supplementing active solar energy systems. The re-emergence of passive systems, updated to include concepts of superinsulation, airtight envelopes, energy recovery ventilation, high performance windows, and managing solar gain originated in the United States and Canada decades ago, a reaction to the OPEC oil embargo.



Constructing or rehabbing houses with large double- or triple-paned windows, gets direct sunlight to capture and magnify the sun’s warmth. The air inside becomes much warmer than the air outside because the windows let in the sun’s energy and trap it, gradually raising the temperature.



Other effective methods of passive solar energy capture include using stone flooring and walls with thick insulation to keep the energy in buildings. With carefully placed windows and other architectural techniques, passive solar energy systems can be an effective way to heat buildings.

Passive design principles attempt to maximize your gains, minimize your losses. A passive building is designed and built under these five building-science principles:

1. Employ continuous insulation throughout the entire envelope with no thermal bridging.
2. Make the building envelope airtight, preventing infiltration of outside air and loss of conditioned air.
3. Employ high-performance windows (typically triple-paned) and doors.
4. Uses some form of balanced-heat and moisture-recovery ventilation and a minimal space conditioning system.
5. Exploit the sun’s energy for heating purposes in the heating season and to minimize overheating during the cooling season.

Passive building principles can be applied to new construction or modernization rehab, all building typologies – from single-family homes to multifamily apartment buildings, offices, and skyscrapers. Passive design strategy carefully models and balances a comprehensive set of factors including heat emissions from appliances and occupants to keep the building at comfortable and consistent indoor temperatures throughout the heating and cooling seasons. As a result, passive buildings offer tremendous long-term benefits in addition to energy efficiency:

- Superinsulation and airtight construction provide unmatched comfort even in extreme weather conditions.
- Continuous mechanical ventilation of fresh filtered air provides superb indoor air quality.
- A comprehensive systems approach to modeling, design, and construction produces resilient buildings.
- Passive building principles offer the best path to Net Zero and Net Positive buildings by minimizing the load that renewables must provide.



Passive houses and buildings are comfortable in all seasons. That's because there are no drafts, temperature variance is extremely narrow (even near doors and windows), and active, balanced ventilation makes for superb indoor air quality. Passive buildings require an airtight building envelope. Combined with super-insulation, this approach dramatically reduces temperature variation, which also prevents condensation and mold issues. The constant, low-level ventilation also helps prevent moisture problems besides maintaining excellent air quality.

To keep people comfortable, you need to provide the right mixture of temperature, humidity, radiant temperature, and air speed. The right level of these variables depends on what activity is occurring, how active residents are, and what they are wearing. Everyone has slightly different criteria for comfort, so comfort is often measured by the percentage of occupants who report they're satisfied with the conditions. Some ways to keep people comfortable are to use the sun's heat to warm them, use the wind or ceiling fans to move air when it's too warm, and keeping surrounding surfaces the correct temperature with good insulation. HVAC equipment like boilers, fans, and heat exchangers can temper the air temperature and humidity, but surface temperatures and moving air must be considered too.

Employing a Combination of Strategies Provides the Best Results

1. **Passive design strategies** use ambient energy sources instead of purchased energy like electricity or natural gas. These strategies include daylighting, natural ventilation, and solar energy.
2. **Active design strategies** use purchased energy to keep the building comfortable. These strategies include forced-air HVAC systems, heat pumps, radiant panels or chilled beams, and electric lights.
3. **Hybrid systems** use some mechanical energy to enhance the use of ambient energy sources. These strategies include heat recovery ventilation, economizer ventilation, solar thermal systems, radiant facades and even ground source heat pumps might be included in this category. You will want to optimize your design for passive strategies first. Doing so can often downsize the active systems you must install.

The analogy of a sailboat, using natural forces to propel a boat through water depicts the concept of passive design. Similarly, you can *sail* your residential building and keep its residents comfortable by using passive design strategies for heating, cooling and ventilation. Complimentary to concept of passive energy systems is visual comfort. Good lighting is well-distributed, not too dim or too strong, and uses minimal energy. Lighting is often measured either by light falling on a surface (illuminance) or light reflecting off of a surface (luminance). These are objective measures, but how people experience this light is often subjective i.e., are they comfortable? Do they experience glare? Good visual comfort also means that as much of this light is natural light as possible. Humans are hard-wired to feel good by the sun's light and it saves energy.

When you need to use artificial lights, you can reduce energy use by using efficient fluorescents or LEDs, with daylighting dimming controls, effective fixtures, and good lighting design. Good controls can automatically balance natural and artificial lighting. Most lights should have occupancy sensors.

Air quality is a related topic to passive energy design. Air can be kept fresh with high ventilation rates, either using natural ventilation such as operable windows and skylights, or active systems such as HVAC fans and ducts. Clean air can be achieved by filtering air, by flushing spaces with fresh outside air, and by not contaminating the air with impurities from the building, such as volatile organic compounds from paints or materials.

Let's also not forget acoustic comfort; how humans perceive sounds and loudness is a subjective measure. You can create a comfortable environment by controlling objective measures like decibel level (sound pressure), reverberation time, and the sound reflection and damping properties of materials. Creating barriers and sound breaks between sources of noise is important. You can optimize room shape and size to reduce echoes and reverberation. You can use acoustic tiles on ceilings and walls to dampen the sound.

In terms of cost, a passive building typically costs about 5-10 percent more than a conventional building. The larger the building the less of a cost difference there is. Also, as more large-scale window and door manufacturers bring high-performance products to market, economies of scale are expected to drive down costs.

We have covered passive energy systems at the 30,000-foot level to make our readers aware of alternative and complimentary approaches to comfort and sustainability. *Watts Hot Newsletter*TM would like to thank and recognize its references, Environmental Science For Dummies By Alecia M. Spooner; Autodesk[®] Sustainability Workshop offering free online resources that teach the principles and practice of sustainability in engineering and design; and the Passive House Institute US (PHIUS), consulting and research firm working to further the implementation of Passive House standards and techniques. If you would like to read more on passive design, you are referred to the above sites.

Pay Attention to the Roof Over Your Head – It Will Eventually Cost You Money

Commercial residential roofs require continuous maintenance and repairs. If you know what to look for, you can catch danger signs of roof failure early to prevent extensive damage from occurring. Lack of maintenance is at the heart of most roofing problems. There are many reasons not to neglect a roof, including financial and safety, but it's important to have routine inspections done. Ponding water, a base flashing that is slipping, or pitch pockets that haven't been filled are items that can be easily spotted and fixed.

Among the most damaging problems is water infiltration. Water infiltration can destroy the roof membrane and infiltrate to the interior of the building causing mold, and damaging property. Regular inspection of interior ceilings and the roof itself can prevent water from infiltrating or can help catch it early. If you notice mold inside your building there is a chance of water infiltration or improper ventilation techniques.

Unfortunately, there are millions of square feet of failed roofs designed to protect the occupants of low income housing, which have long surpassed the end of their useful life. These roofs are often a liability to the building. Its occupants and the lack of funding means these roof replacements often come last in the funding pool for so many buildings. Not sure what condition your roofing system is in? Roof replacement and repairs have come a long way in the last 20 years. Starting with early detection and imaging tools to new roofing system technology that can improve energy efficiency.

Finding the source of the water infiltration should be the priority.

Whether it is cracks in the membrane, standing water, or leaking A/C units they should be stopped to prevent further damage. Caught early, you can avoid major expenses and inconvenience to residents.

Imaging tools provide aerial roof scans, that can identify available options and alternative approaches that can save millions in unnecessary replacements. In a recent USPS building assessment, the images offered objective information and

recommendations for selecting the best course of action on each roof based on the lowest life cycle cost. The analyses revealed that while 60 roofs need replacement, many others only require r-skinning or restoration to perform like new.

Current proposals to HUD's budget, will have major impacts in the years to come, creating a perfect storm for low-income housing to navigate. Avoiding or delaying those roof repairs and replacements will only drive up maintenance costs, approximately 35 percent of what public housing authorities spend for operations. The impact to other HUD multifamily housing programs is no less dramatic.

What If You Could Turn This Problem Into An Opportunity?

That's what happened when Tarrytown and North Tarrytown Housing Authorities in New York State commissioned for the replacement of two long overdue roof replacements using a unique, high performing but low cost roofing solution. In late 2015, an innovative roofing solution known as "Wind Vented" roofing combined with an equally innovative energy saving product called "Infinite-R™ Phase Change Material" to deliver durability and sustainability to both buildings with 35 percent reduction in investment, and an increase in energy performance.

Better Understanding Wind Vent Technology. We are used to hearing about commercial roofs in how they are secured in place to resist wind uplift loads. Common industry terms include "mechanically fastened," "glued down" and "ballasted" roofs to name a few. But there's another option which is a game changer to commercial and residential buildings, and it's called a "Wind Vented Roof."

As wind gusts move across the surrounding terrain and encounter a building, the vertical walls of the building stop the path of the wind at that location. This creates turbulence around the corners and edges of the building, while larger wall areas force the wind gusts upward toward the roof. Once reaching the roof where there is sudden relief, a large suction pressure results from the swirling winds that creates a significant liability to any roofing system.



Traditionally, roofing contractors overcome this liability with lots of screws and or glue systems to keep the roof securely in place. But a wind vented roof system instead uses strategically placed "vortex valves" that relieve the pressure difference between the top of the roof and the underside of the roof membrane. The result is a "Vacuum" effect that draws the roof system down to the roof deck as wind picks up. *"The harder the wind blows, the greater the vacuum keeping the roof in place."*



Phase Change Material Complements the Wind Vent System. If you have not heard about this technology yet, its versatility is impressive. Infinite-R™ Phase Change Materials reduce the energy it takes to heat and cool your buildings by naturally absorbing and releasing heat. This is achieved by undergoing a change from solid to liquid that requires significant more energy per degree of rise. For instance, the ice inside a drink cooler is a phase change material that freezes and melts at 32°F/0°C. When exposed to temperatures above 32°F, it melts and absorbs heat to maintain the same temperature until fully melted. It does the same to release heat at 32°F when exposed to say 25°F until it's frozen.

Infinite-R™ Phase Change Material is a building product designed to be placed within the envelope of a building. It's designed to freeze and melt at a specific design temperature such as 72°F or 78°F, so it works just like ice inside the cooler but at a temperature that helps the building assembly in the heat of summer or dead of winter, or both.

Tarrytown & North Tarrytown Housing Authorities Case Study

Under a competitive bid arrangement, Alternative Roofing Solutions, Inc (ARS) was selected to perform the roof replacement projects for the two separate housing authorities of Tarrytown and North Tarrytown, New York. ARS installed the Infinite-R™/Wind Vented Roof System on both buildings. The current building's roof systems were composed of coated modified bitumen over 1 1/2" perlite insulation over a structural concrete deck.

The roof systems were in failed condition. Existing roof conditions included ponding water, failed field membrane and coating, and several areas where trapped moisture within the system was apparent and roof saturation had occurred. The procedure for these roofs was to begin in some areas that were holding a higher amount of moisture. Here they cored down to the concrete deck and inserted a wet-vac to extract water. Any residual moisture left in the roof system would be remediated by the new wind vented roof system, with capability to allow water vapor to release from the roof system.

Work could then proceed:

- 1. Removal and disposal of the existing debris and loose material prior to installation of the new system.**
- 2. All punctures, voids and seams were repaired with new modified bitumen patching material to seal existing system and create air tight seal for the valve system to work properly.**
- 3. Furnish and install ERC 5/16" Separator Mat loose laid over the entire roof surface.**
- 4. Furnish and install Infinite R Phase Change Insulation loose laid over the entire roof surface.**
- 5. Furnish and install 1/2" Dendeck loose laid over the entire roof surface.**
- 6. Furnish and install ERC 80 mil PVC roof membrane loose laid over the entire roof surface following manufacturer's installation instructions.**
- 7. Furnish and install vortex valve/vents systematically placed per manufacturer's recommendations.**
- 8. All walls and curbs to receive new PVC flashings and termination bar along total rise wall conditions. All post & support hand rail systems received new ERC PMMA liquid flashing.**

The North Tarrytown site had parapet walls with Terracotta coping. ARS demolished the existing coping and ran a PVC flashing sheet up and over the parapet walls and then installed new 24-gauge metal coping. The design behind this system prevents costly labor by not having to demolish or tear off the existing roof system, restores existing roof system by installing ERC's Wind Vented Roof System, and installs Insolcorp's Phase Change Insulation within the new system to save energy. This made for a great partnership between ARS, ERC, and Insolcorp.

The project resulted in a 30-year roof that carries a 130 MPH wind warranty with increased energy performance. The beauty of the system from a contractor's stand point is the ease of install. Tarrytown and North Tarrytown projects were completed in 11-12 working days each. Alternative bids using conventional roofing solution suggested almost three times longer labor hours to complete the work.



The Wind Vent/PCM Solution

The manufacturers behind Wind Vented Roofing (Environmental Roofing Components, Inc) and Infinite-R™ Phase Change Materials (Insolcorp, LLC) have combined their expertise to develop a unique roofing solution that provides maximum roof value without sacrificing energy performance. By loose laying the Infinite-R™ mats into a roof deck, the impact is an average 3 to 5 times R-value performance of the roof system.

Roof-top solar in your future? The wind vent, Infinite R solution can be adapted to enhance your sustainable building design.

Does Your Energy Consultant Have the Right Stuff?

Given the current fiscal constraints that PHAs and other multifamily properties are operating under, most don't have the luxury of having an energy manager on staff. And yet, since energy expenses constitute over 20 percent of a typical portfolio's operating expenses, it is important to secure the capabilities of an energy expert or energy company to help identify and implement strategic energy savings opportunities that reduce costs and better position the organization for the future. Now, more than ever with Washington budget discussions going in a downward spiral, investing in sustainability, conservation can make a difference in securing your bottom-line. Those opportunities can range from creating long term sustainable renewable options, procuring electricity and natural gas from more affordable sources, implementing passive energy solutions, to pursuing energy performance contracting and RAD. As you put together your procurement to purchase energy consulting services, here are seven tips to help you.



1. Be Specific, Yet Comprehensive

As you write your procurement documentation, be specific as possible as to your immediate energy consulting needs and the tasks you want performed. Include language that allows you to utilize your energy consultant's expertise on other energy related issues, as they unfold. For example, if you require energy expertise to help you navigate the energy performance contracting process, list the specific tasks that you want performed. Build in language that allows for the consultant to review and analyze and make recommendations on the annual measurement and verification (M&V) report provided by your energy services company (ESCO) or other entity during the term of the energy services agreement to ensure that your EPC is performing as projected.

2. Make sure that your Consultant is Knowledgeable About HUD Programs and Regulations

Selecting an energy consultant that is steeped in HUD programmatic and regulatory knowledge is crucial. The energy consultant should help you ensure that not only are you in compliance with HUD regulations but that you understand the interplay between various HUD programs and funding sources. For example, if you are contemplating whether to convert your portfolio to RAD (HUD's Rental Assistance Demonstration Program), pursue an energy performance contract (EPC) or to redevelop your properties in another manner, make sure your energy consultant understands the big picture and knows the nuances between all of the programs and how best to evaluate what is in the best interests of your assets, your organization and your residents.

3. Choose a Consultant that is Knowledgeable About New Emerging Energy Savings Technologies

The energy field and related technologies is evolving rapidly. New generations of LED lights, breakthrough technologies like phase change materials that build in energy savings into building envelopes, and innovative locally distributed generation strategies like fuel cells, solar and wind are changing the ways we look at energy savings as well as sustainability, resiliency and disaster mitigation.

4. Choose a Consultant that is Knowledgeable About Financing Energy Infrastructure Improvements

As they say, it is all about the money. You may have the best energy savings strategy in the world but if you can not find a way to pay for it, it is useless. Your energy consultant should know about a range of ways that your energy improvements can be paid for using rebates, incentives, and other techniques to complement traditional debt based financing. And, the way we pay for energy enhancements is changing. New off-balance sheet approaches have surfaced that allows for energy improvements to be paid for without incurring debt. Your energy consultant should be able to help you navigate the options and find the best fit to meet your needs.

5. Choose an Energy Consultant that is Knowledgeable About Our Industry

Having an energy consultant that understands and is committed to our industry is important. Having a consultant that is knowledgeable about industry best practices will help your organization in not having to re-invent the wheel as you look at energy savings options.

6. Choose an Energy Consultant with a Track Record of Success

Take the time to understand your prospective consultant and/or energy company. Do they have a track record of success in the areas that match up with your energy needs? Be sure to interview them and check their references! You are developing an often, long term relationship with your energy consultant and you should invest adequate time to make the right choice that will stand the test of time.

7. The Intangible

Choose an energy consultant that you can work with! Last, but not least, choose an energy consultant that is the right fit for your organization, one that you and your staff can work with. Finding the right energy consultant that is knowledgeable, competent, a good communicator, team-oriented and who is respectful to your staff from the administrative assistant to the CEO and your Board is extremely important. Finding an energy consultant with a good sense of humor helps as well.

***Michael Nail** is President and CEO and Co-Founder of Enlightened Enterprises, Inc. Mike was also the former deputy executive director of NAHRO. He is an industry leader/manager, strategic thinker, entrepreneur, community advocate and consensus builder, business-to-business leader, and energy expert. You can reach Mike at 301-639-3767 or enlightened1on1@gmail.com.*

Utility Forecast Spring 2017

Source: Energy Information Administration

Power - On the heels of President Trump signing an Executive Order last week that might roll back environmental protections established by the Obama Administration, speculative forward power pricing has dipped again, in the expectation of reduced costs for the power industry.



- EIA forecasts Brent **crude oil** prices to average \$55/b in 2017 and \$57/b in 2018. Benchmark North Sea Brent crude oil spot prices averaged \$55 per barrel (b) in February, largely unchanged from the average in January.
 - EIA expects a relatively balanced oil market in the next two years. U.S. regular gasoline retail prices are forecast to average \$2.40/gal in 2017 and \$2.44/gal in 2018.
- In February, the average Henry Hub **natural gas** spot price fell by 45 cents per million British thermal units (MMBtu) from the January levels to \$2.85/MMBtu. Unseasonably warm temperatures in the Lower 48 states contributed to lower prices. New natural gas export capabilities and growing domestic natural gas consumption contribute to the forecast Henry Hub natural gas spot price rising from an average of \$3.03/MMBtu in 2017 to \$3.45/MMBtu in 2018.
- EIA expects the share of U.S. total **utility-scale electricity generation** from natural gas to fall from an average of 34 percent in 2016 to 32 percent in 2017 because of higher expected natural gas prices. The natural gas share of generation is then expected to rise slightly to 33 percent in 2018.

- o **Non-hydropower renewables** are forecast to provide 9 percent of electricity generation in 2017 and 10 percent in 2018. The generation share of hydropower is forecast to be relatively unchanged from 2017 to 2018 at 7 percent, and the nuclear share of electricity generation declines slightly from almost 20 percent in 2017 to 19 percent in 2018.
- o EIA expects growth in **coal-fired** electricity generation to contribute to a 4 percent increase in coal production in 2017. Coal production is expected to be unchanged in 2018. EIA estimates the delivered coal price averaged \$2.11/MMBtu in 2016, a 5 percent decline from the 2015 price. Coal prices are forecast to increase in 2017 and 2018 to \$2.17/MMBtu and \$2.21/MMBtu, respectively.
- **Wind energy capacity** at the end of 2016 was 81 gigawatts (GW). EIA expects capacity additions in the forecast will bring total wind capacity to 95 GW by the end of 2018.
- On a percentage basis, **solar power** is expected to be the fastest growing renewable energy source in the forecast period, with total utility-scale capacity increasing by 44 percent from the end of 2016 to 31 GW at the end of 2018. With that level of growth, solar is expected to account for 1.4 percent of total utility-scale electricity generation in 2018.
- After declining by 1.9 percent in 2016, **energy-related carbon dioxide (CO2) emissions** are projected to decrease by 0.2 percent in 2017 and then increase by 1.6 percent in 2018. Energy-related CO2 emissions are sensitive to changes in weather, economic growth, and energy prices.

Put this in the Cool Tool Category! Go EIA!

<https://www.eia.gov/state/maps.php?src=home-f3>

Welcome to the U.S. Energy Mapping System. Use it to explore all available options. There are many features and options available through the “Layers/Legend” menu including recommended map views on a variety of subjects and the ability to customize mapping layer options that may better suit your energy needs.

*Watts Hot Newsletter*TM used the tool to locate all bio-mass, wind, solar and geothermal system in the U.S.

Solar – yellow

Bio-mass – light green

Wind – dark green

Geothermal – yellow donut circles



For MF owners and businesses, lower utility costs mean lower operating expenses. For a public housing authority, the process of securing lower rates and employing an energy technology platform could qualify for a HUD rate reduction incentive of 50 percent and as much as 100 percent if obtained as part of an energy performance contract.

If your state engages in utility deregulation (California, Connecticut, Delaware, District of Columbia, Illinois, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Texas, Virginia), let the Doctors of Energy know if you are interested in evaluating the opportunities of engaging an energy partner and discussing the options.

Energy Champions Podium

In keeping with this quarter's discussion of alternative energy systems, the *Watts Hot Newsletter™ Spring, Energy Champion* is the **Housing Authority of the County of Santa Barbara (HACSB)**, for its work on using innovative financing to obtain a solar renewable energy system.

The Housing Authority of the County of Santa Barbara is a local public agency created under state law for providing safe, decent, and quality affordable housing and supportive services to eligible persons with limited incomes, through many federal, state, local and private resources. Much of the credit for working through the challenges of a 1-year project that magnified to several years was Bob Havlicek, now the Executive Director and Chief Operating Officer for HACSB's non-profit group and to Loren Reeves, HACSB's Senior Accountant. The outcome, however, was rewarding and worth the effort.



HACSB successfully implemented a portfolio-wide renewable energy strategy offsetting 100 percent of the electrical consumption at 21 properties and some of HACSB's administration buildings. The 1.7 MW project involved the installation of over 7,200 solar photovoltaic panels on 157 buildings serving 863 dwelling units, affecting over 2200 family members in 6 permitting jurisdictions served by 3 utility companies and is the largest and arguably the most complex renewable energy project undertaken by a public housing authority.

A key driver for the project was the combined effect generated from California's renewable energy incentives, federal grants and renewable investment tax credit provisions and HUD's Energy Performance Contract (EPC), which facilitated complementary investments in energy efficiency measures. About 50 percent of the project funding was provided from federal sources. Federal resources provided a foundation for the development and execution of an innovative financing strategy achieved through a captive energy company, Surf Solar, and Power Purchase Agreements with HACSB properties. Instrumental in the success of the EPC was Constellation's role as the Energy Services Company (ESCO); Caleb Benham was Project Manager. Constellation is a seasoned Public Housing Authority (PHA)-multifamily ESCo with major PHA projects in Newark and New York City.

This financing structure enabled HACSB to capture and leverage tax benefits that might have been lost because of the PHA's tax status, and capture a portion of the value of the power generated by the system to cover investment debt not offset by grants or other incentives.

Another complexity was the added coordination required in working with three separate utility districts, different requirements and institutional practices to accomplish the reviews, inspections, and utility interconnections. The actual installation of the project solar systems also required expertise in every facet of solar installation, including carport construction, ballasted, and tilted flat roof installation and using string inverters, micro-inverters, and power maximizers, which required monitoring and quality control. The underlying success of this project was as much about the process for navigating through the financial, technical, and institutional complexities, as the result, which is a portfolio of more affordable and sustainable housing.

Congratulations to the Housing Authority of the County of Santa Barbara for being *Watts Hot Newsletter™ Spring, Energy Champions!*

Each quarter, *Watts Hot Newsletter™* will recognize *Energy Champions*, individuals in the affordable housing industry that are *game changers*. Their efforts and contribution have made a significant difference in policy, project design, energy innovation, sustainability, or resiliency, improving the life of the residents they serve.

Nominations are open and up to you, the reader. Nominate a colleague, industry professional that stands out that has made a difference to your organization, community related to energy and water conservation, sustainability, and resiliency. Provide a narrative why this individual(s) should be recognized. It is our intention that each quarter we share with our readers and recognize an individual(s) that is responsible for game changing outcomes.

Watts Hot at HUD

Dr. Ben S. Carson, Sr. was sworn in on March 2nd, 2017 as the 17th Secretary of the U.S. Department of Housing and Urban Development (HUD). During his confirmation hearing before the Senate Banking Committee, Secretary Carson emphasized several themes, including increasing private sector participation in the housing market, encouraging self-sufficiency in assisted housing, exploring the connection between health and housing, reducing regulatory burden and reviewing the HUD budget and each HUD program with an eye towards reform. Secretary Carson is in the midst of conducting his listening tours to hear from stakeholders within and outside of HUD about the department's programs and their efficacy, and ideas for improvements.



Helpful Hints – if you are a PHA, considering a solar project and want to use a power purchase agreement (PPA) for securing the project, you should consult your local HUD Field Office. We have it from reliable sources inside HUD that the Office of General Counsel (OGC) is interested in making sure that the project was procured properly and that language in the PPA does not conflict in any way with your Annual Contribution Contract (ACC) with HUD. You will save heartache and time by coordinating your intentions with your local Field Office to secure support, before entering into a PPA.

Benchmarking

HUD has initiated a six-part webinar that will guide participants through the United States Department of Housing and Urban Development's (HUD) new multifamily utility benchmarking guidance, including the new HUD Multifamily Utility Benchmarking Website and Toolkit. The goal of this series is for attendees to become familiar with the specific guidance and tools HUD has developed to help facilitate, encourage, and streamline the benchmarking of energy and water performance at multifamily properties. Attendees are encouraged to register for and attend all six sessions. Recordings will be provided for those who cannot attend. The series will run from April 13 – June 1, 2017. You must register for the webinars. You will need a HUD exchange account to register. **Create an Account on the HUD Exchange** - Go to the HUD Exchange (www.hudexchange.info). Once logged in, you then select **Enroll in this Class**. To find out more information about upcoming trainings and access materials from previously held trainings, go to [HUD Exchange Trainings](#).

Energy Performance Contracts Study

RFQ ID: RFQ I 15383 I, HUD Review of Energy Performance Contracts (EPCs) in Public Housing (PH) was issued 11/08/2016 07:10:08 AM EST; closed on 12/02/2016 05:00:00 PM EST

SCOPE OF WORK: Review of Energy Performance Contracts (EPCs) in Public Housing (PH)

This Task Order will explore and document the effectiveness and value of HUD's Energy Performance Contracting (EPC) program and produce a report on: 1) a nation-wide analysis of the utility, financial, and physical conditions of two groups of Public Housing Authorities (PHAs) – those that have executed an EPC and those that have not, and 2) the experience of PHAs implementing EPCs. LMI, a management consulting firm in Tysons, VA was selected for the contract.

Resiliency Planning

Federal Register/Vol. 81, No. 242/Friday, December 16, 2016/Rules, and Regulations

AGENCY: Office of the Assistant Secretary for Community Planning and Development, HUD.

ACTION: Final rule.

Modernizing HUD's Consolidated Planning Process to Narrow the Digital Divide and Increase Resilience to Natural Hazards. This rule requires States and local governments to evaluate the availability of broadband access and the vulnerability of housing occupied by low and moderate income households to natural hazard risks, many of which may increase due to climate change, in their Consolidated Planning efforts.

To Advertise

Watts Hot Newsletter™ is produced quarterly by Dick Santangelo and Mike Nail (“Doctors of Energy”) focusing on the newest energy and water technology for the residential Multifamily housing marketplace. *Watts Hot Newsletter*™ is a reference guide for the MF residential marketplace of proven technologies, services, and vendors. The Doctors of Energy will share with readers their combined experience (over 80 years in the energy business) with products, services, and vendors with a proven record of accomplishment for success. We invite guest authors to share experiences in a communal environment of housing professionals to reduce operational costs and maintenance, while improving portfolio’s resiliency. *Watts Hot Newsletter*™ recognizes *Energy Champions* in our industry that have made significant contributions to conservation, sustainability, and resiliency in our Energy Champion’s Podium.



Technology is technology. Whether you are private, non-profit, HUD-subsidized, state-financed, controlling operational costs are the key to quality housing. Energy and water costs represent a bigger share of your investment dollar every year, especially if your portfolio is aging. Finding the most effective technical solution to reduce energy and water costs is the common denominator. *Watts Hot Newsletter*™ current circulation of approximately 5,000, comprises MF property owners, non-profits, public housing authorities, housing industry organizations, HUD/DOE staff, energy services companies, energy consultants, RAD developers, financing institutions. As a leading housing energy technology resource, *Watts Hot Newsletter*™ is a fantastic, cost-effective method to advertise to the affordable housing community. Advertising space is limited and is available on a first-come, first-served basis.

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