WATTS HOT Newsletter®

YOUR SOURCE FOR ENERGY, TECHNOLOGY, SUSTAINABILITY & RESILIENCY

APOLLO Engineering Solutions®

Winter 2018 | Volume 2, Issue 2

AN EXPRESSION OF GRATITUDE

In these gray days of winter and challenging times in our Nation's capital, I want to borrow a topic from John Brandon, *Contributing Editor, of Inc.com*. The Super Bowl is over, the Philadelphia Eagles took home the Lombardi Trophy. Mr. Brandon raises the question, where would Tom Brady be without his receivers, without his offensive line, without his coaching staff? We think about one person leading a team, executing a plan and saving the day when it's often a supporting cast of people that make success a reality.

We are often guilty of this in our own jobs. We flatter people, give them kudos in a meeting, but in private with the boss or the customers, we credit ourselves for the success. We make a good argument—we led the team that produced the work, we prompted and motivated members to go the extra mile. We don't take the time to realize who is on the front lines, day in and day out, meeting with customers, dealing with the conflicts, performing mundane tasks required to "push the chicken to the drive-out window," make the sale, close the deal.

Here is a challenge for each of us. Do what Tom Brady does (fan or not). He posted a long tribute to his team, the victorious Eagles, and his fans. He used a word that doesn't make the rounds in the sports industry as much as you might think. The word he used constantly? It's *gratitude*. And, it's what makes a true champion. We can all use a simple thank you, pat on the back or appreciative smile occasionally to express our gratitude.

We can all show gratitude more often, making an extra effort to make sure everyone we meet, team members, customers, colleagues, vendors, even strangers know of their valuable contribution to the overall success of a sale, a community project, a rescue, bake sale, your peace of mind, your family's safety. Hand out a thank you, a hug, a hand without taking credit. Pump up others, or set aside your own ego, and show genuine gratitude for any opportunity to give another human a moment on the pedestal.

Watts Hot Newsletter® wants to express its gratitude to all its readers at its one-year anniversary. We have gotten great feedback and critical commentary that makes us a more valued resource to the housing community.

Oh yes, lest I forget, thank you John Brandon, *Contributing Editor, for Inc.com*.

UPCOMING EVENTS

- **NLIHC 2018 Housing Policy Forum**
  March 19-21, 2018
  Washington, DC

- **NAHRO Washington Conference**
  April 22-24, 2018
  Arlington, VA

- **PHADA 2018 Annual Convention & Exhibition**
  May 6-9, 2018
  New Orleans, LA

- **2018 Energy Efficiency Finance Forum**
  May 21-22, 2018
  Tarrytown, NY

- **NAHRO Summer Conference**
  July 27-29, 2018
  San Francisco, CA

- **ACEEE Summer Study on Energy Efficiency in Buildings**
  August 12-17, 2018
  Pacific Grove, CA

Enlightened Enterprises, Inc., Apollo Engineering Solutions, LLC and 2rw Consultants Partnering to Provide an Innovative, Expanded Level of Service

The principals of **Enlightened Enterprises, Inc.** (Mike Nail), **Apollo Engineering Solutions** (Dick Santangelo) and **2rw Consultants** (Bob Somers), announced an exciting new alliance. The new alliance between the firms, which began January 1, expands the range of energy engineering, design, financing and other services to their public-sector customers, public housing authorities and other providers of affordable housing. Nail commented on the alliance by saying, "Given the financial and regulatory uncertainties that our clients are faced with in this new political and operational environment, we believe that this new alliance will bring expanded and needed services, solid and creative advice and new implementation tools to help their organizations weather the storm and better position their organizations for the future.

Santangelo commented that "we are seeing a new wave emerging in the utility consulting arena associated with MF residential property." The traditional engineering solution has proven limited in today's customer savvy world. Customers want solutions, not discussions. Technical solution must go beyond the technical answers and consider health, resiliency, capacity building, human-factors, financing and other aspects rarely known or considered years ago. Our customers want one-stop shopping, cradle to grave solutions that allow them the freedom to focus on their core mission. For a PHA or MF property owner, that mission is real estate and the activities associated with effectively managing investments. Concerns over aging facilities, e.g., boilers, elevators, roofs take away resources from core activities associated with community planning, investment, property management disposition.

Enlightened Enterprises, Inc.

Enlightened Enterprises, Inc. is a privately held Maryland Corporation. The company, which is a 50% woman owned business has two divisions, Enlightened Energy Consultants (EEC) and Enlightened Energy Solutions (EES). Working with our world class partners, Enlightened Energy serves the comprehensive energy needs of our public-sector clients. EEC is an industry leader in providing energy performance contracting (EPC) owner's representative and self-managed EPC energy services to the Nation's Public Housing Authorities (PHAs) with over $400 million in successful EPC projects. EES brings innovative state of the art energy saving products and services, including energy infrastructure financing to our public-sector clients including PHAs.

Apollo Engineering Solutions, LLC

Started in 2010, Apollo Engineering Solutions (AES), LLC is an energy solutions-driven engineering firm specializing in establishing the long-term viability of living and working communities. AES develops utility management capacity within its client's business organization by providing green building solutions, resiliency capabilities in tune with the utility needs, acumen, and budget requirements of its clients. AES provides affordable demand and supply solutions that reduce operating costs and enhance sustainability.

2rw Consulting, Inc.

2rw delivers innovative and efficient Mechanical, Electrical, Plumbing, and Fire Protection (MEP/FP) systems and comprehensive energy consulting services to help building owners reduce total cost of ownership, improve occupant comfort and safety, and tread lightly on the planet. With more than 70 LEED projects in our portfolio and one-third of our technical staff carrying LEED credentials, we're highly qualified to deliver unparalleled energy savings on any building project.

As energy plays an increasingly significant role in many organizations' strategic planning initiatives, it's critical to partner with a team you trust for MEP/FP design and energy consulting; one that has the focus and expertise to deliver long-term energy and cost savings and quality-of-life benefits. Our new alliance strives to be that trusted partner—one who will guide you and serve as your advocate throughout every project.

179D Energy Efficiency Rebate Extended!

Danita Childers, Senior Director of Revenue and Partnerships, (left), Michael Gurgone, Chief Investment Officer and Treasurer; and CEO Eugene Jones, Jr., display the savings from a tax incentive program that encouraged energy efficiency.

Great news for Public Housing Authorities and Multifamily owners. All of us can use tax rebates to address aging infrastructure in multifamily properties. The recently passed Bipartisan Budget Act of 2018 included a retroactive one year extension of the 179D program to projects completed last year.

You may recall in any earlier edition of the *Watts Hot Newsletter®*, we reported about the Chicago Housing Authority's (CHA) nearly $100,000 in savings as part of the rehabilitation of public housing units through a Federal Energy Policy Act tax incentive that encourages the installation of energy efficient measures.

The tax code provision, known as 179D, encourages building owners to incorporate energy efficiency measures in the design and construction of public and private buildings. The CHA's Investment Division, working with tax consulting firm Efficiency Energy LLC, has pursued 179D benefits on rehabilitation projects throughout its portfolio. The tax provision allows the CHA to share tax savings in partnership with its designers and contractors for the value of the qualifying energy efficient systems.

Building owners that install these energy-efficient components are allowed a tax deduction of $.60 cents to $1.80 per square-foot for buildings placed in service through last year. This is made possible by Section 1331 of the Federal Energy Policy Act (EPACT) of 2005, which enacted Section 179D of the Internal Revenue Service Code, providing a deduction to energy-efficient commercial buildings. Eligible projects included interior lighting systems, HVAC, hot water systems and building envelope. Besides CHA, the Boston Housing Authority has also secured $239k in savings from lighting retrofits completed 2013-2016.

A recent study posited the potential extension and expansion of 179D could create 77,000 jobs. *Watts Hot Newsletter®* will keep you apprised of further legislative efforts. **There is urgency to take advantage of this recent extension in time to address these 2017 projects in time for tax filings in the coming weeks and months, so please contact Efficiency Energy, LLC to identify potential projects for consideration.** PHAs can use CHAs cooperative procurement protocol to secure 179D services.

Efficiency Energy, LLC remains available to you to discuss current outstanding (and potential) allocations available to PHAs and multifamily owners. Don't leave hard earned money on the table! Retroactive opportunity remains to recover allocations from new construction and lighting/HVAC/envelope retrofits completed prior to 2017.

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Sustainability as a Service (SaaS) Provides Innovative Approach to Address Infrastructure Needs of Multifamily Housing

Realize tangible reductions in total cost of energy infrastructure resulting in lower utility and operating expenses

President Trump proposed a budget includes a 14 percent cut to HUD, amounting to $6.8 billion below the agency's current $48 billion spending, an even deeper cut than his previous year's proposal which had been the most dramatic cut to HUD since President Ronald Reagan slashed the agency's funding in the early 1980s. The Administration has proposed eliminating the entire fund for public housing capital repairs, a savings of nearly $2 billion a year. As they say down south, that dog won't hunt! We will see push back, and some negotiated level of funding will emerge. Nevertheless, it does represent a *shot across the bow*.

This Administration's focus signals the need to explore alternative approaches to address infrastructure needs, e.g., boilers, elevators, windows, roofs that can no longer be paid from generated savings in an EPC. The EPC program has matured with the fast payback savings from water and lighting already realized. Without the water and lighting savings to offset slower payback measures, elevators, boilers, windows, roofs, etc. cannot be addressed through an EPC.

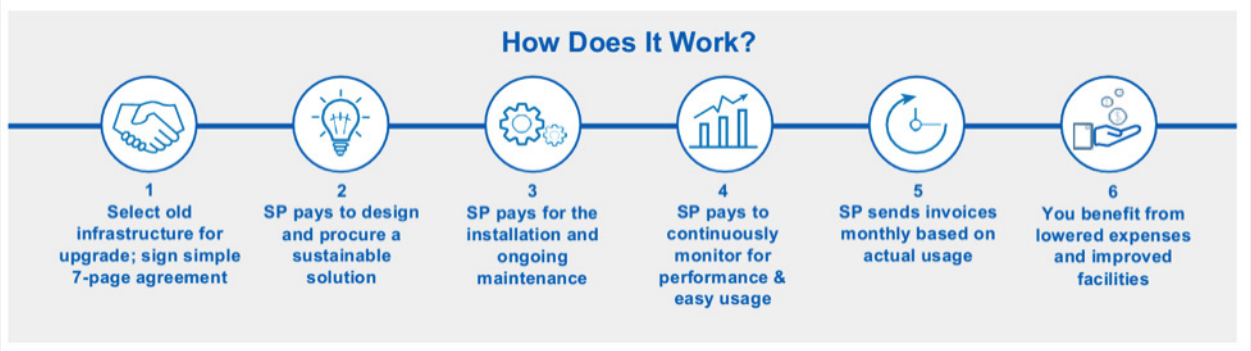
The challenge for Public Housing Authorities (PHAs) and Multifamily (MF) facility managers is not the question of what my infrastructure requirements are, rather how will my infrastructure rehabilitation get done. Any reduction in capital funds adversely affects PHAs ability to address its capital infrastructure needs through its capital funds or Capital Fund Financing. The targeted cut comes when public housing faces a backlog of capital needs upwards of $40 billion. In New York City, about 80 percent of public housing tenants suffered heating and hot water outages in recent months because the aging boiler systems desperately need repair.

PHA should have choices to decide what infrastructure rehab program works best for them, that serve the best interests of their properties. Modernizing MF residential infrastructure reduces utility expenditure. Implementing all essential facility upgrades not only brings reliability and improved value, but long-lasting efficiency. Competing priorities for capital resources frequently compel customers to defer maintenance investments. When critical assets fail, property owners, PHAs must replace them under duress, usually at a cost far higher than a prudent planned replacement strategy. "Run-to-fail" scenarios rarely result in replacement with the newest, most efficient alternatives, further reducing the cost savings benefits from the upgrade.

Numerous challenges and concerns exist over worn, fraying infrastructure systems. Options exist to traditional energy performance contracting, capital fund, use of reserves or other traditional financing approaches. SaaS is emerging for municipalities, universities, schools, hospitals public housing authorities and privately own multifamily affordable housing properties that is worthy of consideration.

SaaS is a product of cloud technology, investor innovation and a call from this Administration's need for greater private sector involvement to finance the revitalization of housing units, that can replace inefficient infrastructure with cost-saving solutions, materials, product installation, long-term support, and guaranteed performance. SaaS can pay for 100% of materials and installation and continuously invests in well-funded maintenance, upgrades, and eventual replacements.

SaaS is not about debt-financing! Under the SaaS model ownership responsibilities and risks are assumed by an independent agent. Like a gas or electric bill, the MF Owner or PHA only pays for usage. Utilities - like gas, electric, and water - are essential and easy to contract. They run continuously and reliably 24/7, 365 days, year after year. Like a utility, SaaS works behind the scenes to provide essential infrastructure components as an operating expense with no demands on the customer's budget. The flow chart below describes the six step process in the SaaS model, starting with a needs assessment and concluding with lowering operating expenses and improved readiness.



No guaranteed minimums, monthly commitments, or multi-year contracts

- **Any time purchase option at cost less usage**
- **Simplified RFP and easy procurement**
- **Usage-based billing; no use = no fees**
- **Sub-meter data automatically sent to cloud**
- **24/7 monitoring and real-time alerts for potential outages or performance problems**
- **Upgrades and maintenance included**

Do you have more questions on how the SaaS approach can address your infrastrucure needs?

Call us at *Watts Hot Newsletter*®, 703-627-7161 Dick Santangelo or Mike Nail 301-639-3767 or send your inquiry to wattshotnewsletter@gmail.com.

Combined Heat and Power in Multifamily Buildings – A Matter of Safety

Watts Hot Newsletter® has received many inquiries regarding its combined heat and power article in last Winter's 2017 newsletter. Our readers wanted to know more about the states promoting CHP and more case studies where CHP has been used to address resiliency and resident safety.

As you may recall, we had an overview of combined heat and power (CHP) or cogeneration for multifamily housing: what it is, where installed, what efforts to promote it. Those references are still useful. This is an update on CHP production, DOE support and expansion of the Industry.

SYNCHRONOUS CHP

Data on CHP in Multifamily Buildings

The DOE-ICF **CHP Installation Database** lists CHP installations in 28 industries https://doe.icfwebservices.com/chpdb and is updated each June. Under NAIC 53111, the multifamily category added at HUD's request, the 2016 production was 29, in nine states: CA, CO, ID, IL, MA, MD, NJ, NY, PA, and Washington DC, for 322 installations. ICFI advised that multifamily housing was the application with most new installations in 2016 for any industry. The list shows the kilowatt generation for each entry, but it does not enable determination of which are in HUD programs. HUD staff scrutinized the 2013 CHP Installation Index and identified 37 "probable" and 17 "possible" program participants. The list identifies eleven public housing authorities with CHP. These lists could be used by HUD and the national housing associations to exchange information on financing, savings and operating experience.

The NYSERDA DG Integrated Data System http://dg.nyserda.ny.gov/facilities lists and links the many facilities in its program. About 81 multifamily systems are included. It provides reports, including Fact Sheets with locations, and monitoring data operations. Of special interest for resiliency planning are those with synchronous capability, like the Brevoort that survived Hurricane Sandy's knockout of the grid below 30th Street. These systems are called standalone or *blackstart*, with capacity to restart without the grid. We identified eight listed in January *Watt's Hot*: Cabrini Terrace, Concord Court Apartments, Octagon, Trump Tower, Toren Condominiums, Seaside Apartments, Silver Towers, Schwab House. By searching the latest NYSERDA fact sheets we found and linked eleven standalone additions among the fourteen 2016 entries: The Beresford, Hayden on the Hudson, Citylights Upstairs, Gramercy House, West 96th Apartments, The Petersfield, Parc East, Plaza Residences 23-25, Plaza Residences 250, Dorado Apartments, and The Westmont.

These 19 apartment buildings contain about 6,000 units. If grid failures occur, they would provide "safe-at-home" shelter for over 10,000 residents and, using the experience of the Brevoort after hurricane Sandy, refuge services for an equal number. This is a significant group to bring under the health and safety goals of resilience planning. While most of these are styled as "luxury" buildings, we have identified three as "assisted housing," and we have details on a fourth, the Plaza Residences, 385 Section 8 assisted Section 8 HUD rental units in six buildings. They have CHP developed, monitored and maintained by Aegis Energy Services using 35kW Yanmar equipment capable of standalone. Total cost was $1.1 million. Subsidies from NYSERDA and Brooklyn Queens Demand Management total $670,000. Gross utility savings are $275,000 annually and maintenance of $35,000 for two years result in a two-year payback!

These are the first HUD Section 8 assisted housing projects of which we are aware. They emphasize the importance of the subsidies, which are a characteristic of the states like NY, MA, CT, CA and NJ that have the most multifamily housing CHP installed. The Maryland Energy Administration issued a Notice of Grant Availability for its FY 2018 $5.5 million CHP grant program: www.Energy.Maryland.gov which will consider applications for multifamily buildings. Its deadline was Feb. 15, but it will be worth attention for possible 2019 funding. State subsidies can be a great assist for financing CHP in affordable housing.

DOE CHP Accelerator

As noted last January, this Accelerator was announced at the 2016 Better Buildings Summit as a collaborative effort to support and expand consideration of CHP and other distributed generation solutions for critical infrastructure resiliency planning at the State, local and utility levels. DOE provided this update explanation of the status of the Accelerator as of November 2017: "CHP for Resiliency Accelerator partners work collaboratively to support and expand consideration of CHP solutions at critical infrastructure. The US DOE is currently collaborating with partners on developing tools and resources that will be made public to help states, communities, and utilities identify and prioritize critical infrastructure sectors and screen individual sites that are conducive to CHP in their territory or region, including multifamily buildings. These resources will be available in Winter 2018, followed by partner snapshots highlighting approaches to resiliency in Spring 2018." You can view the Accelerators at https://betterbuildingsinitiative.energy.gov/accelerators.

DOE CHP Taps and Project Profiles Database

CHP Technical Assistance Partnerships (TAPS) have provided support for over 1,900 CHP projects and prepared and posted over 120 detailed profiles, recognized as one of the most useful ways to share information. In December DOE announced the release of $25M to continue operation of eight TAPS. They transferred the engineering service for Northeast from U Mass to U Maine. TAPs have declined requests to make profiles for multifamily buildings to reflect the increased installations in different states. At the November Boston meeting attended by fifteen of the CHP Accelerator Partners, the EERE AMO TA Program Manager responded to an inquiry by saying there would be profiles of multifamily installations in 2018. Northeast TAP http://northeastchptap.org advises that it will be posting a number this year.

CHP Industry Expansion

The CHP industry serving housing has expanded rapidly. The two companies that have done the most with multifamily housing are Aegis Energy Services (www.aegisenergyservices.com) and Tecogen (www.tecogen.com), and they are very active. NYSERDA's promotion events have brought additional companies into the field. Many have videos of their installations on their home pages. The availability of CHP equipment smaller than 50kW increases their prospects, as noted above for Plaza Residences.

The New Economics of CHP

HUD put the promotion of CHP in its 2000 Energy Action Plan. The goals were to cut utility costs and to reduce harmful emissions. HUD 2009 CHP Guide #2 with ORNL software enabled building managers to calculate the potential payback over a period of years. This software needs updating. Resilience planning has focused on the need for distributed energy and the importance of enabling "critical facilities" to maintain power if the grid went down, as it did in Hurricane Sandy. One summary of the economics for standalone systems uses an estimate of $4,000 kW for basic CHP and $6,000 for standalone. NYSERDA has promoted standalone by providing additional $1,500. A Real

Estate Investment Trust (REIT) in NY invested in standalone for two buildings. Two REIT-owned multifamily buildings in Maryland installed CHP without it in 2016 because the payback was sufficient.

The Copper Building in NY installed standalone-type equipment in the penthouse apartment, and it counted on recovering the expense by raising the cost of its apartments. But unlike gensets that are essentially "dead assets" and only used in an emergency, the blackout-start capable CHP system delivers daily energy savings besides standby capability. The market approach is not available for public and assisted housing. But public housing has authority to use energy performance contracting with up to twenty years payback for recovering the private investment. The tax reform act did not eliminate Private Activity Bonds used to help finance affordable housing. Also, insurance companies have adjusted their rates downward to recognize the value of standalone systems. Some newer projects have created cost centers by selling electricity to occupants.

New HUD Renewable Energy Workbook Includes CHP

This new toolkit shows step-by step- how to integrate renewable energy into an affordable housing project in a way that's efficient, cost-effective and impactful. See pages 9, 31, 32, 36 and 67 for an overview of CHP (cogeneration). https://www.hudexchange.info/resources/documents/Renewable-Energy-Toolkit.pdf.

The Urban Land Institute's summary of the 2017 Resilient Cities Summit, cited Harvard Business School professor John Macomber's view: "If you are going to be resilient, you have to include the most vulnerable populations in your plans." Multifamily building occupants of all incomes are vulnerable, and CHP should be considered in the planning process.

Our guest author, Mr. Robert Groberg was recognized as a Distinguished Key Contributor to HUD's Energy Efforts during its 50th Anniversary. For many years, Mr. Groberg was the Energy Division Director, Office of Community Planning and Development, Office of Environment and Energy. He also Co-Chaired, HUD Energy Task Force. He was nominated for the 1996 Public Service Award of the U.S. Energy Association. Mr. Groberg was Acting Director, HUD Office of Environment and Energy when he retired in 2010 and has provided pro-bono support for CHP since then. Questions for Bob Groberg can be sent to wattshotnewsletter@gmail.com.

Energy Champions Podium

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 for Energy Champions are up to you, the reader. Say *Thank You for Your Service*, by nominating a colleague, industry professional that stands out. An individual, group or team that has made a difference in the areas of energy and water conservation, sustainability or resiliency.

Provide a narrative as to why this individual(s) should be recognized. Unfortunately, for the summer edition we did not receive nominations. A simple thank you is the best way to recognize dedication, loyalty and professionalism.

To paraphrase a quote, *an individual that contributes to the benefit of others is like a four-leaf clover, hard to find and lucky to have*.

We Won, A Clean Energy Future Can't Be Stopped!

President Donald Trump took office vowing to revive the coal industry. So far, the smart money has been on clean energy. An index of 40 publicly-traded solar companies, wind-turbine component makers and others that benefit from reduced fossil fuel consumption is up 20% this year. That's more than double the S&P 500's 9.8% gain, and better than the 8.3% rise by an index of leading coal companies.

Recently, the U.S. government presented a new challenge for the clean energy industry, and multifamily owners interested in investing in renewable energy. The solar PV import tariff challenges all reason. The intended purpose to boost the domestic manufacturing of cells and modules—which employs less than 38,000 people—and add jobs while reducing imports, also stands to lose about 88,000 jobs, about one-third of the American solar workforce, according to the Solar Energy Industries Association (SEIA), the national trade association for the solar industry. In addition, it threatens to raise the cost of electricity for solar customers across the nation and slow the biggest boom in solar deployment in U.S. history.

Eventually, the tariff will not rein in Chinese cell and module manufacturing. The Chinese ramp-up in solar manufacturing that has driven cost declines and global market disruption now appears primarily intended to meet domestic Chinese demand, which totaled 100 GW installed in the past three years—three times that seen in the United States. Meanwhile, the Indian government recently decided to cancel 16 GW of coal plants due to lack of interest among its constituent states, driven by attractive prices of renewables.

According to the Rocky Mountain Institute (RMI) any negative impacts on industry growth caused by the tariff will largely be mitigated by current global trends and innovation. Competition in the U.S. market and downstream business innovations have driven average annual cost reductions of 12% per year, inviting billions of dollars of investment and placing solar among the fastest-growing industries in the U.S. The resulting cost competitiveness has stirred a hunger in every customer segment for cost-effective and clean electricity supply putting pressure on regulators, utilities, and energy retailers to pass through the solar savings or potentially lose their customers. We can say that clean energy is in our future, that clean is profitable and that an investment in clean energy is an investment in our residents.
Clean energy has won and there is no turning back. Let's discuss five compelling reasons for this deduction.

1. You need only to follow the money.

Money drives the train. Research teams at Bloomberg New Energy Finance (BNEF) report that "Renewable energy sources are set to represent almost three quarters of the $10.2 trillion the world will invest in new power generating technology until 2040." Even more significantly, across the Asia Pacific region (including the Chinese and Indian economies), BNEF reports that renewables will account for over 60 percent of new energy investments, versus just 10 percent for coal and gas generation. Also, the market for green bonds—investment securities that generate money to be used for projects with environmental benefits—has soared to new heights. Green bond issuance reached $155.5 billion worldwide in 2017, up 78% from the previous year on strong backing by the United States, China, and France. Finance experts predict exponential growth in 2018 and are optimistic that green bonds could be a $1 trillion market by the end of 2020.

2. The "expensive" renewables myth is dead!

In late December 2017, RMI announced that construction began on a 3 MW solar project in New Mexico that will sell its power below 4.5 cents per kilowatt-hour. This price is officially the lowest reported contract for distributed photovoltaic solar energy across the entire U.S., beating coal prices that average 6 cents and up per kilowatt-hour and competing with natural gas prices averaging 4.2 cents and up.

In January 2018, Colorado utility company Xcel Energy received wind power bids with a median average price of 1.8 cents per kilowatt-hour, and Solar's median bid was 2.95 cents per kilowatt hour. Even with storage technology costs included—allowing renewables to generate 24/7 just like fossil fuels—the average wind price was 2.1 cents per kilowatt hour and the average solar price was 3.6 cents per kilowatt hour. According to the Denver Post, if wind bids come in at 2 cents per kilowatt hour, customers would save $175 million versus building new fossil fuel plants. A low-carbon economy will be better for the environment and electricity customers.

3. Big Business is invested in renewables.

In 2017 corporate renewable energy buyers reached a cumulative 10 gigawatts (GW) of new renewable energy projects. This milestone means that corporate-backed renewable projects now power the equivalent of over 7 million homes. And as more companies make the choice to buy renewable energy to power their operations, the market is responding to enable smaller, more diversified companies to transact. In the past year, companies buying renewables ranged from high-tech players like Google and Facebook to heavy industrials like Cummins and auto manufacturers like General Motors. Even beer giant Anheuser-Busch InBev got in on the action with not one, but two renewable energy purchases including a massive wind farm in Oklahoma. Combined, these businesses and their peers contracted for 3.11 GW of power last year, the second-best year ever for corporate renewable energy buying. It's important to realize these companies buy renewables not because they must, but because it's good for business. With over 10 GW of new renewables coming online due to corporate buyers, the tide is turning against naysayers who believe renewables are only viable due to government intervention.

4. The days of internal-combustion-powered transportation appear to be numbered.

Over the past year, governments in China, India, France, Britain, and Norway announced that they are considering bans on gas and diesel cars. Besides the proposed internal combustion engine (ICE) bans, several countries are creating official sales targets for electric vehicles (EVs), including Ireland, Japan, Korea, and Spain. And as we see with corporate renewable energy buyers, the private sector is primed to play a major role in catalyzing the shift to low-carbon EVs. At the 2018 Detroit Auto Show, Ford Motor Co. announced that it plans to grow its investment in EVs to $11 billion by 2022—nearly a 250 percent increase over initial plans to spend $4.5 billion by 2020. Analysis from Reuters shows this commitment brings the overall EV investment pipeline from global automakers to $90 billion. General Motors alone plans to bring 20 new battery and fuel-cell electric models to market by 2023.

Between state governments seeking to control pollution and reduce carbon emissions from the transportation sector, and a rapidly evolving private sector eager to make money off the electrification transformation, the Tesla has left the garage for good on EVs.

5. The renewables revolution is here to stay.

Even oil companies like of Shell, BP, and Exxon are already planning for a low-carbon world with new investments in renewable energy companies and new climate initiatives in the wake of pressure from key shareholders. In January 2018, Shell announced an investment of up to $217M in a Nashville-based solar company. Shell's VP of solar explained the decision by saying, "This joint venture partnership progresses our new energies strategy and provides our U.S. customers with additional solar renewable options." Meanwhile, just one month earlier, BP announced its plans to invest $200M in a major European solar developer. While these are still relatively small clean energy bets compared to what these companies spend on their core business, this is a trend worth tracking.

We can't stop at winning, even though a low-carbon future is all but inevitable. Climate change still represents an existential threat to our way of life as we know it, believe it or not. While 2017 ranked as the second-hottest year since 1880, the Trump administration continues "dismantling efforts to fight climate change." Now is the time to accelerate the transition to a low-carbon economy.

Watts Hot Newsletter® would like to recognize and thank the Rocky Mountain Institute specifically Kevin Haley, Jules Kortenhorst, Thomas Koch Blank and Kieran Coleman for their research and related articles.

Utility Forecast – Winter/Spring 2018

Groundhog Day 2018, according to legend, indicates we are in for six more weeks of winter because Punxsutawney Phil saw his shadow.

Homeowners, businesses and utilities across much of the United States are keeping a close watch on fuel supplies as a record-setting cold snap caused demand for heating oil and natural gas to soar. With heating units in homes and commercial buildings running furiously to fend off the deep freeze, power companies warned of possible fuel shortages to come.

Short-Term Outlook

OIL

European crude oil spot prices averaged $69 per barrel (b) in January, an increase of $5/b from the December level. Monthly average prices have increased for seven consecutive months, and, on January 11, spot prices moved higher than $70/b for the first time since December 2014. Energy Information Administration (EIA) forecasts European spot prices will average about $62/b in both 2018 and 2019 compared with an average of $54/b in 2017. U.S. crude oil prices to average $4/b lower than European prices in both 2018 and 2019. NYMEX WTI contract values for May 2018 delivery traded during the five-day period ending February 1, 2018, suggest a range of $55/b to $77/b encompasses the market expectation for May 2018 WTI prices at the 95% confidence level. We have seen gas prices at the pump rise.

NATURAL GAS

EIA estimates that U.S. dry natural gas production averaged 73.6 billion cubic feet per day (Bcf/d) in 2017. EIA forecasts that natural gas production will reach 80.3 Bcf/d in 2018, establishing a new record. That level would be 6.7 Bcf/d higher than the 2017 level, and the forecast 2017 growth would be the highest annual average growth on record. EIA expects natural gas production will also increase in 2019, with forecast growth of 2.6 Bcf/d. In January, the U.S. benchmark Henry Hub natural gas spot price averaged $3.88 per million British thermal units (MMBtu), up $1.06/MMBtu from December. Cold temperatures east of the Rocky Mountains in early January contributed to high levels of natural gas consumption as well as a reduction in production because of well freeze-offs. This combination resulted in record-high natural gas inventory withdrawals in mid-January, which contributed to rising prices. EIA expects natural gas prices to moderate in the coming months, based on a forecast of record growth in natural gas production.

ELECTRICITY, COAL, RENEWABLES, AND EMISSIONS

EIA expects the share of U.S. total utility-scale electricity generation from natural gas-fired power plants to rise from 32% in 2017 to 33% in 2018 and to 34% in 2019. The forecast generation share from coal in 2018 averages 30%, about the same as in 2017, but then falls to 29% in 2019. The nuclear share of generation was 20% in 2017 and is forecast to average 20% in 2018 and 19% in 2019. Nonhydropower renewables provided slightly less than 10% of electricity generation in 2017 and is expected to provide about 10% in both 2018 and 2019. The generation share of hydropower was almost 8% in 2017 and is forecast to be about 7% in both 2018 and 2019.

RENEWABLES

Wind generated an estimated 691,000 megawatthours per day (MWh/d) of electricity in 2017. EIA projects that generation from wind will rise to an average of 705,000 MWh/d in 2018 and 765,000 MWh/d in 2019. If project conditions hold, generation from conventional hydropower is projected to average 730,000 MWh/d in 2019, which would make it the first year that wind generation exceeds hydropower generation. EIA projects that total solar electricity generation will increase from an estimated average of 209,000 MWh/d in 2017 to 240,000 MWh/d in 2018 and to 287,000 MWh/d in 2019. After declining by 0.8% in 2017, energy-related carbon dioxide (CO_2) emissions are projected to increase by 1.8% in 2018 and by 0.4% in 2019. Energy-related CO_2 emissions are sensitive to changes in weather, economic growth, and energy prices.

Watts Hot at HUD

Energy Performance Contracting

Project Savings/Cost Verification Workshop For Public Housing Authorities

HUD is announcing that the Buffalo Field Office will be hosting a three-day **Energy Performance Contracting Project Savings/Cost Verification Workshop** on March 20–22, 2018 provided by HUD-funded Technical Assistance provider, FirstPic, Inc. This **no-cost course** is geared toward PHAs with active Public Housing Energy Performance Contracts (EPCs). The workshop was developed to specifically target PHA staff. The course is geared to obtaining a deeper understanding of HUD's approved measurement and verification process and energy and water savings validation methodology.

Class attendees will spend half of their class time in lecture and discussion; the remaining class room time will be spent practicing and performing energy and water savings validation techniques related to the frozen rolling base (FRB), add-on subsidy (AOS), and resident-paid utilities (RPU) incentives. A complete understanding of HUD's approach to energy and water savings validation will assist the PHA in preparing an accurate operating subsidy submission for subsidy eligibility and a greater understanding of HUD's role in review and processing.

The goals of the Energy Performance Contracting Project Savings/Cost Verification Workshop are to:

1. Provide an understanding of the roles and responsibilities of HUD and the PHA in evaluating EPC savings;
2. Educate PHAs with existing EPCs on HUDs Measurement and Verification (M&V) requirements; and,
3. Educate PHAs on HUD's methods of validating utility cost savings and applying the results to the Operating Subsidy.
4. Discuss how their PHA-ESCO contract savings guarantee works and how it compares to HUD requirements.

Register now

http://buffaloepc.firstpicregistration.com

Class size is limited. Contact and secure this training with your local Field Office if your agency is interested in attending. Training is for PHAs, HUD Field Staff will monitor the training. No outside participation is authorized at this time. Trainings are being planned for five more locations over the spring and summer with dates TBD.

Contact Us

For further follow-up information on the *Watts Hot Newsletter®* articles or questions about the newsletter you can call or email:

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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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