

Spring 2019 | Volume 3, Issue 3

## Reconnect and Discover at the 2019 MAHRA & MARC NAHRO Conference/Expo and at NAHRO's 2019 Summer Conference

Faced with rising utility and maintenance costs, deferred equipment maintenance, unreliable federal funding and limited Capital Fund monies, PHAs need alternatives to traditional debt-financed infrastructure improvements, easy to use and RAD-compatible. A new solution has emerged fueled by new technology and access to more capital through an expansion of public-private partnerships. An approach where a third party owns, maintains equipment, and is responsible for the performance of the new equipment, charging the PHA only a usage fee, like your utility company for electrical service. HUD has guided how PHAs can utilize this approach.



**Reconnect and discover** at the 2019 MAHRA & MARC NAHRO CONFERENCE AND EXHIBITION at the MGM, Oxon Hill, MD. Join Mike Nail discuss A New Funding Solution for Your Agency's Aging Infrastructure. Discuss "as a Service" alternatives with Mike, former NAHRO Deputy Executive Director/Chief Operating Officer on May 30<sup>th</sup> at 1:45 p.m. - 3:00 p.m.



**Reconnect and discover** "as a Service" in a panel discussion of alternatives with Dick Santangelo, Mike Nail, and Pat Landers on Thursday, July 11, 10:15 a.m. - 11:45 a.m.



## UPCOMING EVENTS

- » **2019 MAHRA & MARC NAHRO Conference and Exhibition**  
May 29-31, 2019  
Oxon Hill, MD
- » **PHADA's 2019 Annual Convention & Exhibition EDEP Courses**  
May 31-June 1, 2019  
Fort Lauderdale, FL
- » **SERC-NAHRO Annual Conference**  
June 23-26, 2019  
Orlando, FL
- » **2019 NAHRO Summer Conference**  
July 11-13, 2019  
Boston, MA
- » **PHADA 2019 Legislative Forum**  
September 8-10, 2019  
Washington, D.C.
- » **NAHRO National Conference**  
October 10-12, 2019  
San Antonio, TX

# Infrastructure Needs in Public Housing Continue to Grow

The House Appropriations Subcommittee that oversees funding levels for affordable housing and community development programs at HUD released on May 22 a draft fiscal year (FY) 2020 spending bill that provides a robust increase in funding to housing programs that serve low-income people and communities. The subcommittee is expected to take up the bill this week, with a full committee vote after the Memorial Day congressional recess.

The House bill likely provides enough funding to renew all existing contracts provided through Housing Choice Vouchers (\$23.8 billion) and Project-Based Rental Assistance (\$12.59 billion). Beyond rental assistance, the House subcommittee bill provides robust increases to most programs. The HOME Investment Partnerships program (HOME) (\$1.75 billion) receives the largest increase, along with Community Development Block Grants (\$3.6 billion), Native American Housing Block Grants (\$855 million), and Choice Neighborhoods (\$300 million). Homeless Assistance Grants (\$2.8 billion), Section 202 Housing for the Elderly (\$803 million), Section 811 Housing for People with Disabilities (\$259 million), and the Public Housing Operating Fund (\$4.75 billion) received increased funding as well.



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Good as that news may be for housing programs, it's not yet the enacted budget. This Administration's focus signals the need to explore long term 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 traditional financing approaches.

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The challenge for PHA and 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 hurts a PHAs ability address its capital infrastructure needs through its capital funds, Capital Fund Financing or reserves. 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 last winter 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, Public Housing Authorities (PHA) 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. A new service is emerging for municipalities, universities, schools, hospitals public housing authorities and privately own multifamily affordable housing properties worthy of consideration.

"as a Service" financing 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 robust performance. "as a Service" can pay for 100% of materials and installation and continuously invest in well-funded maintenance, upgrades, and eventual replacements.

Under “as a Service” approach 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 24x7, 365 days, year after year. Like a utility, “as a Service” works behind the scenes to provide essential infrastructure components as an operating expense with no demands on the customer’s budget. While “as a Service” is comparable, “as a Service” goes beyond that of a traditional utility. “as a Service” is not delivered as a standard product to a customer’s door. “as a Service” success depends working tirelessly to ensure the customer’s solutions are always at peak performance.

Stop the painful cycle of RFP/Budgeting/Financing/Bond/Taxes/Rental/PPA’s/Leases and Shared Savings arrangements. With the “as a Service” Model approach, the customer commits to no minimums, no terms, and no debt. The customer simply pays for what they use.



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

- Anytime 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

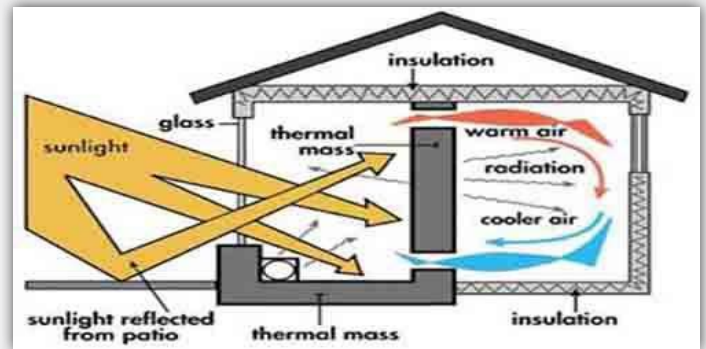
**Do you have more questions on how the “as a Service” approach can address your infrastructure needs?**

Join us on May 30<sup>th</sup> in MD for **NAHRO’s 2019 MAHRA & MARC NAHRO Conference/Expo** and at **NAHRO’s 2019 Summer Conference** in Boston, July 11, 2019. You can also contact Dick Santangelo at 703-627-7161 or Mike Nail at 301-639-3767 or send your inquiry to [WattsHotNewsletter@gmail.com](mailto:WattsHotNewsletter@gmail.com).



# 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:**

- ✓ Employs continuous insulation throughout its entire envelope with no thermal bridging
- ✓ The building envelope is airtight, preventing infiltration of outside air and loss of conditioned air
- ✓ Employs high-performance windows (typically triple-paned) and doors
- ✓ Uses some form of balanced-heat and moisture-recovery ventilation and a minimal space conditioning system
- ✓ Solar gain is managed to 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'll 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 the 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 like 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. However, 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. And you can use acoustic tiles on ceilings and walls to dampen the sound.

In terms of cost, a passive building costs about 5-10% 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 passives 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™ 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.*

## Does Your Housing 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. In addition, 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 procure your energy consultant, 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. Also 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.

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## 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.

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## 3. Choose an Energy 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.

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## 4. Choose an Energy Consultant that is Knowledgeable about Financing Your Energy Infrastructure Improvements

– As they say, it’s all about the money. You may have the best energy savings strategy in the World but if you can’t find a way to pay for it, it’s 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.

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## 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.

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## 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? And, 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.

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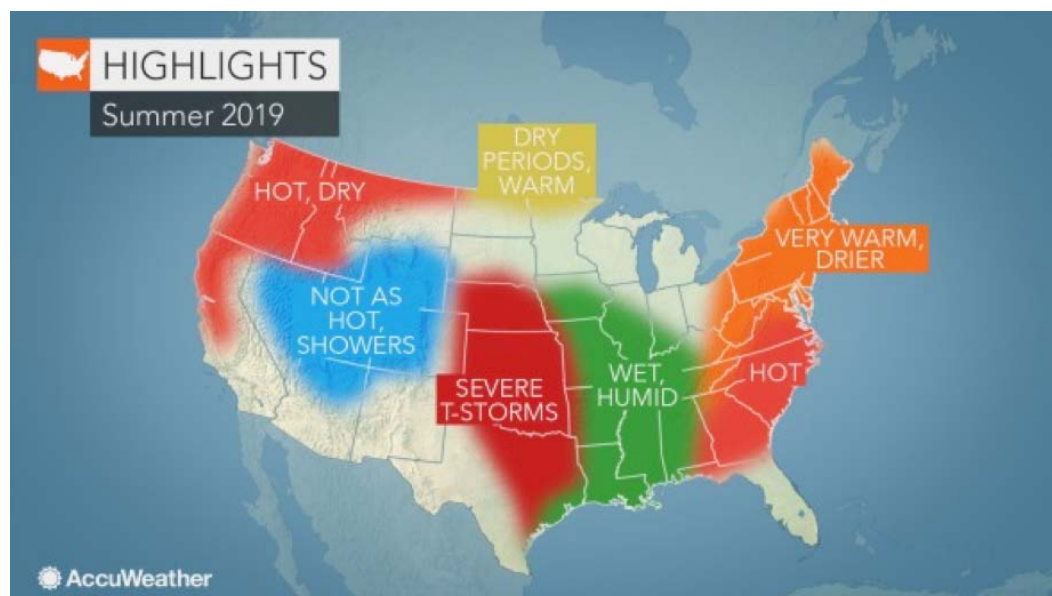
## 7. The Intangible – Choose an Energy Consultant that Fits Your Needs!

– And 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 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 for Summer 2019

Summer weather will waste no time spreading across the Northeast and mid-Atlantic this season as heat arrives in June. However, the Midwest and central Plains will see more of a gradual transition. Meanwhile, the northern Plains will benefit from a below-normal season for severe weather, while the southern Plains are battered by flooding rainfall and severe storms. Reflected in the weather is the higher consumption of natural gas, oil and electricity.



## Forecast Highlights

### Global Liquid Fuels

- Summer is approaching with Brent crude oil spot prices averaged \$71 per barrel (b) in April, up **\$5/b** from March 2019 and just below the price in April of last year. EIA's higher Brent crude oil price forecast reflects tighter expected global oil market balances in mid-2019 and increasing supply disruption risks globally.
- For the 2019 summer driving season, which runs from April through September, EIA forecasts that U.S. regular gasoline retail prices will average \$2.92 per gallon (gal), up from an average of \$2.85/gal last summer. The higher forecast gasoline prices primarily reflect EIA's expectation of higher gasoline refining margins this summer, despite slightly lower crude oil prices.

### Natural Gas

- The Henry Hub natural gas spot price averaged \$2.64/million British thermal units (MMBtu) in April, down 31 cents/MMBtu from March. Prices fell as a result of warmer-than-normal temperatures across much of the United States, which reduced the use of natural gas for space heating and contributed to above-average inventory injections during the month. EIA expects strong growth in U.S. natural gas production to put downward pressure on prices in 2019 and in 2020. EIA expects Henry Hub natural gas spot prices will average \$2.79/MMBtu in 2019, down 36 cents/MMBtu from 2018. The forecasted 2020 average Henry Hub spot price is \$2.78/MMBtu.





## 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 35% in 2018 to 37% in 2019 and to 38% in 2020. EIA forecasts that the share of electricity generation from coal will average 24% in 2019 and 22% in 2020, down from 27% in 2018. The nuclear share of generation was 19% in 2018, and EIA forecasts that it will stay near that level in 2019 and in 2020. The generation share of hydropower averages 7% of total generation in EIA's forecast for 2019 and 2020, like 2018. Wind, solar, and other nonhydropower renewables together provided about 10% of electricity generation in 2018. EIA expects they will provide 11% in 2019 and 13% in 2020.
- EIA forecasts that all renewable fuels, including wind, solar, and hydropower, will produce 18% of U.S. electricity in 2019 and almost 20% in 2020. EIA expects that wind generation will surpass hydropower generation for the first time to become the leading source of renewable electricity generation in 2019 and maintain that position in 2020.



## Green House Gas



- After rising by 2.7% in 2018, EIA forecasts that U.S. energy-related carbon dioxide (CO<sub>2</sub>) emissions will decline by 2.1% in 2019 and by 0.8% in 2020. EIA expects emissions to fall in 2019 and in 2020 as forecast temperatures return to near normal after a warm summer and cold winter in 2018 and because the forecast share of electricity generated from natural gas and renewables increases while the forecast share generated from coal, which produces more CO<sub>2</sub> emissions, decreases. Energy-related CO<sub>2</sub> emissions are sensitive to weather, economic growth, energy prices, and fuel mix.

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