



**MU News Bureau**

*Daily Clips Packet*

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## Mark Reardon Show: Cartwright Discusses New Direction for the University of Missouri

What did Mark give to trick-or-treaters last night? Halloween jokes are unnecessary. Washington State head football coach Mike Leach isn't a fan of candy corn. **The new Chancellor of the University of Missouri – Columbia campus is Alexander Cartwright. He discusses the direction the university is headed after 2015 and the enrollment concerns.**

Listen to the interview: <http://stlouis.cbslocal.com/audio/mark-reardon-show/> (second link, November 1<sup>st</sup> 2017, 2-3 pm begins at the 7:58 minute mark).



## University of Missouri backtracks on 'House of Cards' reference

By RUDI KELLER

**The University of Missouri was forced into the position of apologizing to lawmakers Wednesday when a call for student interns began with a bold-faced sentence to "Experience the real life House of Cards!" as the show was being canceled for [allegations of sexual misconduct](#) by star Kevin Spacey.**

The message was included in a MU Info email sent early Wednesday and was [posted on a web page](#) that contained the same information as the email. The other items in the email are similar in nature, offering opportunities for internships, meetings and social events on campus.

“I find that comparison a bit insulting, whether they were trying to be controversial or not, that is the way I interpret it,” said state Rep. Martha Stevens, D-Columbia. “I get that, especially for the age demographic, they used the reference to get someone’s attention.”

The Office of Service Learning included the reference to make a pop-culture connection for students, spokesman Christian Basi said. While the email cannot be recalled, the internship entry was stricken from the web page, he said.

“We realize that this headline is in poor taste,” Basi said. “The item has been removed from website and edited and won’t appear again. And we have been in contact with several legislators to express our apology and explain.”

The Netflix series depicts intrigue in a Washington, D.C., where corruption, sex and murder are tools for personal advancement and the people’s business is conducted only as a way of accumulating power. Allegations that Spacey attempted to molest actor Anthony Rapp when Rapp was 14 forced producers to cancel the show.

The reference also reminds observers of the General Assembly of the problems created in 2015, when [Democratic state Sen. Paul LeVota](#) stepped down after allegations that he sexually harassed interns and Republican House Speaker John Diehl left office after admitting that he sent [sexually suggestive texts](#) to an intern.

The scandals rocked the Capitol and led to calls for change. In response, Diehl’s successor, Republican House Speaker Todd Richardson, recommended changes to the House harassment policy with input from the Women’s Foundation. The changes, which were adopted, include mandatory annual sexual harassment training for all members and staff.

In August, Partners in Prevention and the Missouri Coalition Against Domestic and Sexual Violence [created a website](#) for interns to identify, report and respond to sexual harassment in the workplace. The website was created amid efforts to address past claims of sexual harassment and inappropriate behavior toward interns by state lawmakers.

Richardson could not be reached for comment Wednesday.

State Sen. Caleb Rowden, R-Columbia, who wrote in a text message that he stopped watching the show after the first season because it “got weird and way too dark for me,” also wrote that he understands the use of a pop culture reference but that it “probably not the best way to do it.”

Jefferson City is not like the Washington portrayed on the show, Rowden said.

“I would encourage interns to come to Jeff City to see what a citizen legislature looks like and experience the good parts of government,” Rowden said. “That’s not to say that everyone down there is perfect, but I believe the environment is better now than it was 10 or even five years ago, and will continue to get better with time.”

State Rep. Cheri Reisch, R-Hallsville, said she has not seen the show. A new legislator finishing her first year in office, Reisch said the training lawmakers receive is very clear about what is expected around interns.

“We are mandatory reporters” when complaints are made or bad conduct is observed, she said.

State Rep. Kip Kendrick, D-Columbia and the Democratic whip, said he has worked to improve the experience for student interns since 2015.

“As we all know, things have not always been conducive for student learning in the capital,” he said. “There is plenty of room for improvement and that was what I focused on with some policy recommendations. That has been part of our mission.”

The university held a roundtable last week attended by all six Boone County lawmakers and students interested in internships. The university values the experience its students have during legislative sessions, Basi said.

“We have partnered with the Missouri legislature for many years to encourage students to complete these internships and they have been very good experiences for our students,” he said.

## THE KANSAS CITY STAR.

### Greek system at risk as Mizzou office ‘bounces from one fire to the next,’ report says

By Katy Bergen

**Consultants reviewing the Office of Greek Life at the University of Missouri have issued a scathing report, calling the office devoid of focus, direction and leadership.**

[A report from Dyad Strategies](#) Oct. 24 attributed dysfunction in the office in part to a previous director’s decision to “scale back” services to Greek chapters to the “bare minimum.”

The office cut back those services two years ago after it was unable to get a student fee for Greek students passed.

The result, reviewers said, is a Greek system exposed to great risk when it comes to issues of student drinking, hazing, and substance abuse. That has left students and alumni disillusioned and distrustful of the university's role in Greek life.

“It appears the office bounces from one fire to the next, spending the bulk of its time advising council officers and responding to allegations of misconduct ...,” the report said.

The university commissioned the report for \$22,000 in August, [the Columbia Missourian reported](#).

According to the report, operating with minimal staff and little resources, the office is stretched thin. The report said students see the office as a “reactionary unit” that only gets “involved with us when” (a problem) “hits the fan.”

Groups both on and off campus struggle to get in touch with office staff, and students on Greek governing councils and in chapter leadership don't feel comfortable sharing concerns, issues, or problems with the Office of Greek Life for fear of punishment or retribution.

One student told interviewers that “a fraternity would implode before they go to the University for help.”

The office's lack of oversight and involvement with chapter programming already has had severe consequences.

The campus has seen a rise in unregistered Greek parties, where drugs and alcohol are more prevalent and women have greater concerns about sexual assault, sorority leaders told interviewers.

The environment is also conducive to hazing; alcohol consumption was the most common form of hazing, both sorority and fraternity members said.

Currently, the office only has one official tasked with investigating hazing allegations.

The Greek system's audit of social activities is ineffective and easy to navigate around, students said. In addition, the Greek housing area is neither in the city police nor university police jurisdictions, so law enforcement presence in those areas are low.

The report also highlighted problems associated with letting freshmen fraternity recruits live in Greek houses, where an environment with parties, alcohol, and drugs can be distracting.

Additionally, two fraternities that lost their recognition from the university still operate under national recognition and thus are not subject to the rules that other chapters are.

The report also acknowledged concerns by students in black fraternities and sororities, who said they did not receive the same funds or support that historically-white fraternities and sororities do.

“The University of Missouri has a fraternity/sorority community that could best be described as underachieving,” the report stated.

Recommendations in the report included:

- Developing clear, concise goals and missions for the Office of Greek Life;
- Defining the relationship between the Office of Greek Life, Greek chapters and governing councils;
- Creating a process that clearly outlines how misconduct is handled and outlining discipline;
- Creating a council for alumni to advise current chapters on various issues;
- Banning hard alcohol in fraternity houses;
- Having mandated inspections and spot checks on nights where no social events are scheduled;
- Creating a hazing investigation team;
- Removing freshmen from fraternity houses.



## Mid-Missouri first responders train others for active threats

By: Taylor Petras

COLUMBIA, Mo. - Five University of Missouri faculty members participated in a 90-minute active threat classroom course offered by the MU police department Wednesday afternoon.

MUPD's Citizens' Response to Active Threat (CRAT) teaches participants how to respond to an active shooter. Another CRAT class includes a hands-on simulation portion.

"It's critical to realize police officers can't be everywhere, so people are going to have to be able to respond themselves, depending on where they are and what's going on around them," said Major Brian Weimer.

Weimer said the class is designed to show participants the different options they have when dealing with an active threat. CRAT teaches the FBI's "Run, Hide, Fight" method.

Run away from the threat if you can. If not, hide and barricade where you are and fight back if you encounter the threat.

Weimer said threats involving cars, such as what happened in Manhattan earlier this week, have made law enforcement take a second look at how to prepare for events.

"What it comes down, to plain and simple, is the individuals need to be observant of their surroundings and what's going on around them," he said. "It could be a vehicle, it could be a person, it could be a number of things."

Deputy Chief Fire Marshal Tim Bach with the Columbia Fire Department tells ABC 17 News the best way for first responders to be prepared for an event like in Manhattan is to practice.

"I've noticed with our last couple trainings that people are taking it a little more serious and a little more real," he said. "I think we all have that in the back of our head that it could happen here. Columbia is not exempt from something like that happening."

# Forbes<sup>®</sup>

## [It's On Us Surpassed A New Goal Last Week -- And We Have A Few Friends To Thank For That](#)

By: Alex Vassiliadis , **Civic Nation**

Last week was seven days filled with campus It's On Us pledge drives, Teal Tuesdays, roundtables, and thousands of students who showed up—both in person and online—to take a stand. They came together to answer the call to support their peers and sexual assault survivors.

More than 40 campuses led over 130 registered events bringing in over 11,000 It's On Us new pledge signatures. And there are still more pledges rolling in from campuses and events across the country.

**It's On Us Mizzou, the University of Missouri's chapter, was a shining example of the spirit encompassed by the week. Their schedule was loaded with different calls to action, including something called "Teal Tuesday" where students showed up to sign the fall banner, take the pledge, and receive a teal It's On Us t-shirt. Since April, they have been able to pass out over 980 shirts. And last Tuesday, they gave out 150 shirts in one day.**

It's On Us Mizzou Director and Regional Advisor Tori Schafer expressed her excitement over the impressive 107 student members serving on their campus chapter.

"The group members range from fraternity men, student athletes, and members of multiple clubs, such as *Women in STEM*. Our It's On Us team members meet weekly to work on It's On Us programming for our campus," said Schafer.

In addition to the impactful events, It's On Us announced the Greek Leadership Council, a coalition of fraternity and sorority member groups committed to being a part of the solution to end sexual assault. The council had 12 confirmed organizations at launch with expressed interest from other fraternities and sororities to join. The groups will mobilize their own resources and use their individual campus chapters to encourage awareness and action to support survivors and prevent sexual violence. The organizations that have joined for the inaugural year so far include: Alpha Chi Omega, Association of Fraternal Leadership & Values (AFLV), Delta Gamma, Delta Zeta, Kappa Alpha Theta, Kappa Kappa Gamma, Kappa Delta, Phi Kappa Theta, Psi Upsilon Fraternity, Sigma Kappa, Sigma Sigma Sigma, and Zeta Beta Tau.

But that's not all.

Comedy Central, in partnership with It's On Us, released a [lighthearted video dealing with the serious topic of being an active bystander](#), rather than a passive one. The video features Action Guy, a superhuman without superpowers. The only power this one guy has is the courage to speak up when he hears an individual pressuring someone else. He keeps his eyes open to see when someone without the ability to give consent is being led into a situation that requires it. He has the willingness to help his fellow peers when they feel unsafe. No super powers. No costume. Just readiness for action.

Watch the video: <https://youtu.be/T4MQKa6FOeg>

It's On Us even got a [shout-out](#) from longtime supporter and sexual assault survivor, Lady Gaga. She released a video on her social media channels with a message from her and her "buddy," Vice President Joe Biden.

"It can be terrifying waking up everyday feeling unsafe in your own body. But we're here to remind you to that it's important to reach out to someone in your life that you can trust. And to know that they will be there to help you. There will be someone to listen. 'Cause you know what? It's On Us." said Lady Gaga in the video with Vice President Biden.

A week of action can fulfill the need that exists to stand with survivors and actively take change into our own hands. As these seven days come to an end, remember that it's okay not to confine this spirit of action to this week alone, but to let it spread to every week after that.

It's on us to show up, take a stand, and end sexual assault on campus every week.

# Men's Fitness

## Do you need to warm up more if working out in cold weather?

Research shows easing into your training session is even more essential when the temperatures drop.

**Stephen Ball has been pitched numerous times by the News Bureau as a fitness and health expert.**

IF YOU'RE A seasoned veteran in the gym, you already know that you need to do some kind of warmup before lifting iron or pounding the treadmill. The movements get more blood flowing to your muscles so they respond quicker and become more flexible and less prone to injury when doing an intense workout. Ideally, your warmup should imitate the exercises you plan on performing in the main workout, and ramp up slowly to your preferred intensity. For example, when warming up for a run, simply start with a walk and then transition into a slow jog.

But when temperatures drop and winter rolls in, and you're heading outside for a run or a romp in an outdoor gym, do the frosty temps mean you need to warm up for longer?

Remember, your warmup has two main purposes: to decrease risk for injury and enhance performance.

**“A warmup prepares the body for exercise by increasing the temperature of muscles and connective tissue, which makes them more supple and elastic,” says Stephen D. Ball, Ph.D., professor of nutrition and exercise physiology at the University of Missouri. “Nerve conduction is also improved, which aids in fluid movement—all of these factors reduce risk of injury. The warmup also prepares the cardiovascular and metabolic systems to deliver blood and oxygen to the working tissues.”**

Also, warming up before practice—specifically 20 minutes of strength, balance, plyometric, and agility warmup—reduces injury risk, according to a 2011 [study](#) from Northwestern University on almost 1,500 high school athletes. Research has also shown that warming up can improve your on-field execution—a [meta-analysis](#) of 32 studies done before 2010 showed that warming up before sports can boost performance by 79%.

Point is: Because warming up literally increases your muscles' internal temperature before strenuous activity, you should definitely warm up for longer when it's cold outside, says Ball. He recommends doubling your normal warmup, and starting out much more slowly because it is tougher for your body to exercise in lower temperatures. Also, says Ball, if exercising in the cold, dress in layers, know the [warming signs of frostbite](#), and be aware of the [wind chill](#).

One interesting point: You don't need to warm up inside (unless you really hate the cold and want to limit your exposure as much as possible, although one then wonders why you're outside at all). People with asthma or heart conditions should speak with their doctor before exercising in extreme temps.

Some other general tips for warming up, during the winter or not, include performing the aerobic part of your warm up first. "The warm up traditionally consists of two components—aerobic and flexibility," says Ball. "The biggest mistake I see in novice exercisers is that they stretch first before performing the aerobic portion of the warmup. You shouldn't stretch a cold muscle since that may cause more harm than good."

And another factor related to warming up that most people neglect is the cool down period after your workout. "The cool down reduces blood pooling in your muscles and promotes recovery by removing metabolic waste products," says Ball. "Ever notice that Michael Phelps swims at a slow pace after his races versus just floating there?" After a run, bookend your [warmup with a walk](#) for three to five minutes; when you're done lifting, try a few minutes of lunges on legs day or some static stretching to help your pumped up muscles relax.

# THE ST. LOUIS AMERICAN

## Crime and the mental illness blame game

By: *Jameca Falconer*

Innovative new research from the University of Missouri (by Philip Robbins and Paul Litton) has shown that offenders with genetic mental disorders that predispose them to criminal behavior are judged more negatively than mentally disordered offenders whose

**criminal behavior may have been caused by environmental factors, such as childhood abuse.**

The findings from this study are astounding and speak to how individuals perceive offenders of crime. These authors sought to determine if it mattered how defendants acquired those mental disorders, and how that might influence the way society assigns blame and punishment when a crime is committed.

Robbins and Litton's findings showed that when the cause of a mental disorder was genetic, study participants tended to assign more blame and harsher punishment for the crime, compared to cases in which the offender had a mental disorder that was not genetic in origin. This is totally the opposite of what I (and probably many others) have assumed. I have always thought that people who commit criminal acts but suffer from a mental disorder would be assigned less blame and punishment for their crimes.

Psychologists and those in the mental health field are familiar with this phenomenon. It is called attribution theory, a psychological theory that influences how people attribute certain situations. Attribution theory states that we have a tendency to explain someone's behavior by attributing a cause to his/her behavior. In our effort to try to understand the behavior of others, we explain their behavior in terms of their personality and disposition (internal), or we explain their behavior in terms of the situation (external).

For instance, you might, explain your boss's harsh words about your performance as being the result of his angry personality type, or you might attribute it to his disappointment with the overall office performance. If you attribute his harsh words to the angry personality type, then you have made the fundamental attribution error. The fundamental attribution error is our tendency to explain someone's behavior based on internal factors, such as personality or disposition, and to underestimate the influence that external factors, such as situational influences, have on another person's behavior.

This is particularly true when the behavior is negative. For example, when a person commits a crime, we tend to think it relates to their personality, rather than the situation the person might be in. This is especially true in cases of mental illnesses.

Even though most research on crime favors the view that both personality and situational factors play a mutual role in determining behavior, most people fail to realize or acknowledge this. Individuals with genetic mental disorders may engage in criminal behavior because of their characteristically poor impulse control, difficulty with long-term thinking, and difficulty handling stressful and emotionally fraught situations.

It seems that individuals who possess these deficits are seen as fundamentally flawed (e.g., personality and disposition) and less deserving of leniency, whereas individuals who were abused as children and go on to commit crimes are seen as victims. The results of the study show that although individuals born with mental disorders have difficulties managing their behavior, society sees this as similar to deficits in personality.

These findings suggest that presenting evidence of childhood abuse suffered by the defendant in a criminal case will be more effective than explaining the crime in genetic terms. In addition, these findings indicate that jurors need to be educated more on the characteristics of genetic mental disorders. Jurors should understand that individuals born with mental illness are victims, but in a different way than those individuals who were abused as children.

*Jameca Falconer, PhD, is a licensed psychologist and Public Education coordinator for the Missouri Psychological Association.*



**Dyslexia "just a different way of learning"**

**By CAROLINA BRIGAGAO**

**Watch video at: <http://www.komu.com/news/dyslexia-just-a-different-way-of-learning->**

COLUMBIA - "I just didn't want to read. I strayed away from it. And when my mom finally got me to read, it would be backwards."

**Hayley Cape is a senior at MU, and remembers how she realized she might be dyslexic.**

"I would want to start at the end of the book and then go to the front of the book. My mom thought it was just because I was left handed that I wanted to do that," she said.

Cape was diagnosed with dyslexia in fourth grade, but her struggles with learning started before that.

"Kindergarten, first grade I was doing fine. I was social, I had good memorization. It was nothing. And then second grade rolled around, and my parents realized something was up," Cape said.

And she said things got worse in third grade when it came to reading and writing, where Cape said her reading and writing levels were two grades below her peers.

Cathy Cook owns OnPoint Learning Center, where she tutors children with dyslexia.

She has a unique way of looking at the learning difficulty, as she and her four children have dyslexia.

"Dyslexia from my viewpoint is just a different way of learning. It's a different perspective on doing life," Cook said.

This was the focus this week, as the Legislative Task Force on Dyslexia presented a [report](#) recommending that all students in kindergarten through third grade be screened for dyslexia beginning in the 2018-2019 school year. The report also recommended students who show signs of difficulty in literacy, and have not been previously screened, be screened.

Cape supports screening children for dyslexia.

"I feel like, nowadays, everybody has a niche, everybody has their own Achilles heel. So I mean, if they are able to catch something early on when the kids are in elementary school, then why not do it?" Cape said.

Rep. Kathy Swan, R-Cape Girardeau, is the chair of the task force. She said early identification is very important to help students with reading difficulties receive the appropriate education.

"By identifying and addressing this reading failure, students will not only be successful in school but successful in life. If our children do not learn to read they will, and cannot, read to learn," Swan said in a statement on the Missouri Department of Elementary & Secondary Education website.

Cape also encourages children who are diagnosed with dyslexia to be themselves.

"Be proud of that. Be the individual that you are," she said.

The Missouri Department of Elementary and Secondary Education has to develop dyslexia screening guidelines by December 31, 2017. The recommendations also include that teachers have to complete two hours of training each year.



## **MU Health concerned about rise in number of falls from tree stands**

By JOSHUA TYLER

Watch video at: <http://www.komu.com/news/mu-health-concerned-about-rise-in-number-of-falls-from-tree-stands>

**COLUMBIA – MU Health is urging safety when hunters are using tree stands during this hunting season.**

The trauma team treats between 40 and 50 patients from hunting-related accidents each year, MU Health officials said. Most come from tree stand falls. The trauma team has treated about five patients this week due to falls from tree stands, according to Jeff Hoelscher, a spokesperson for MU Health.

Trauma surgeon Jacob Quick said "A lot of people think that most accidents come from firearm injuries, but that's not the case, most of them are falls."

Quick is a hunter and uses tree stands himself.

Most accidents happen because hunters are failing to correctly harness themselves to trees when using the stands, or they decide to not use a harness at all, he said.

“About 80 percent of people who fall weren’t wearing anything,” Quick said. “People tend to think that they’re very uncomfortable. That’s not really the case. The old harnesses were more cumbersome, the newer ones are comfortable and easy to put on.”

Jesse Thompson, an avid hunter who manages at Bass Pro Shop, said it’s important to know the equipment before using it.

“A climbing stand is something that, if you’re not prepared to use or don’t know how to use it, it’s not something you want to try during a hunt or during low-light hours and you’re not ready,” Thompson said.

Deer hunting season using firearms will begin on Nov. 11. Bow hunting season started Sept. 15.



## **Terror attacks instill fear in the community, effective for terrorists, experts say**

*Media coverage help change terrorist tactics*

Watch the story <http://www.abc17news.com/news/terror-attacks-instill-fear-in-the-community-effective-for-terrorists-experts-say/650609651>

COLUMBIA, Mo. - Court documents show that Sayfullo Saipov has been charged with federal terrorism offenses in connection with Tuesday's attack in Manhattan in which eight people were killed.

**It's human instinct to ask why a person would drive a truck onto a bicycle path aiming to injure or kill several people, said Paul Wallace, a terrorism specialist at the University of Missouri.**

Wallace said someone commits a terrorist attack to draw attention to their group or cause and reduce a state or government's legitimacy, while also trying to create legitimacy for their own terrorist organization.

By legitimacy, Wallace means official recognition. A legitimate state has a population it governs, and is recognized by its population and by other states.

Wallace said a way to take away a state's legitimacy is by visibly showing a state cannot provide its people security or safety.

A terrorist organization does not have the normal means, such as power or money, a state would have to effectively get attention, Wallace said.

He said that's why the terrorists resort to violence.

Wallace said ultimately, a terrorist is a political activist; they have a goal or an agenda.

"Terrorism deals with a terrorist who wants to engage in political violence, and the politics is really important," Wallace said.

Wallace said one way to deal with terrorism, called counterterrorism, is by listening to the political agenda the terrorist organization has and helping them deal with their issues, to a certain extent.

"In the interim, you have to protect your people and eliminate [the terrorist organization's] political violence to the extent that you can, but above all, you have to go with root-cause identification and solving of their problems," Wallace said.

Vehicular terrorist attacks have just recently become popular, according to a study from the [University of Maryland](#).

The study shows that vehicular terrorist attacks have started increasing since 2013.

Wallace said the increase is partially caused by media coverage. He said terrorists use media coverage to their advantage, but if the media doesn't cover an attack enough, they change their style of attacks.

Wallace recalled the media coverage of an insurrection in north India, where one of the two groups would stop buses, kill the people on the bus with the opposite religion and set the others free.

"That was enormous headlines. After a while, the newspapers got sort of tired of that, so instead of front page, it became the third page, five pages, because [they're] only killing a few people. So they killed more people and got headlines," Wallace said.

# MISSOURIAN

## MU launches new award for graduate and professional students

By ELIZABETH QUINN

**The Mizzou Alumni Association Student Board is introducing a new award that will recognize 18 MU graduate and professional students.**

The award, Mizzou 18, will acknowledge students for their research, collaboration with faculty and staff and leadership with undergraduate students, according to a news release. The recipients will represent a variety of majors, activities and organizations across campus. The honorees will also choose a faculty or staff member they feel have made an impact on MU students.

Applications for the award open Friday, Nov. 3 and close Thursday, Nov. 30 at 5 p.m. For more information, contact coordinator of Alumni and Student Programs Kyle Mauzey at [mauzeyk@missouri.edu](mailto:mauzeyk@missouri.edu).

## T COLUMBIA DAILY TRIBUNE

## City officials consider biomass plant conversion

By BRITTANY RUESS

A proposed nearly \$27 million electric power project would put the city of Columbia much closer to its future renewable energy goals and likely prompt a bond issue to cover the costs, city officials said Wednesday.

Christian Johanningmeier, the city's power production superintendent, presented preliminary details of the project to the Water and Light Advisory Board on Wednesday. The project would

convert an existing boiler at the city's century-old municipal power plant, which stopped burning coal in 2015, into a biomass fueled power plant.

The plant could produce between 82,000 and 106,000 megawatt hours of electricity annually. Nearly 81,000 megawatt hours of the entire city system's more than 1.2 million megawatt hours came from renewable energy last year, according the city's 2017 Renewable Energy Report.

The proposed biomass plant could increase the city's renewable energy use between about 7 to 9 percent. Officials anticipate the city will get 15 percent of its power from renewable sources by the end of the year.

Columbia voters approved an ordinance in 2004 setting benchmarks for renewable energy use. By ordinance, the city's total renewable energy must account for 15 percent of its energy sources by the end of December.

The city must hit 25 percent by the end of 2022 and 30 percent by the end of 2028.

At the end of September, renewable energy sources accounted for 14.3 percent of total power produced since the beginning of the year. Ryan Williams, assistant director of the city's utilities, said the city will likely meet the 15 percent mark by the end of the year because production slows down in the colder months and wind energy will increase.

No timeline has been set for the biomass project because the funding source has not been finalized, but construction could take about two years, Johanningmeier said. The boiler and turbine would be upgraded while the city would install a new cooling tower and ash and fuel handling equipment. Capital improvements are expected to last 15 years before major maintenance is required.

Tad Johnsen, director of utilities, said the project would likely need to be bond funded and the bond could be specific to the biomass project.

The last time voters approved a single-project bond issue was in April 2011, when 86 percent of Columbia voters approved a \$49.5 million bond issue to purchase the Columbia Energy Center from Ameren Energy Marketing.

Fuel will be the largest operating cost, but the unit price is yet to be determined. Johanningmeier said the city must commit to the project and identify funding before bids can be solicited for fuel and capital costs. Fuel costs could range from about \$36 to \$58 per megawatt hour and are driven "simply by supply and demand," he said.

**Johnsen said the city could save money on fuel costs by partnering on purchases with the University of Missouri, which operates its own biomass power plant.**

The project would likely increase electric rates, but by how much depends on fuel costs and production levels. The lowest rate increase is estimated to be .7 percent and the highest is 3.3 percent.

The Columbia City Council denied an electric rate increase for the 2018 fiscal year — at 1 percent for the average resident — that would have increased monthly utility bills for most residents by 90 cents.

Scott Fines, a member of the Water and Light Advisory Board, said he's worried the public might not view the proposed biomass energy as renewable because it would produce some emissions, and public perception of renewable energy has become increasingly tied to wind and solar energy. The biomass plant would produce nitrogen oxide and sulfur dioxide emissions, but below the city's permitted standards, Johanningmeier said. The plant would be equipped with a natural gas burner to keep those emissions at lower levels.

The emissions might be a factor for voters considering a bond issue. Board member Dick Parker said citizens need to understand that biomass would be a renewable energy source the city could generate any time it wanted.

Wind and solar power are intermittent sources because they only produce power when either the wind is blowing or the sun is shining. Wind power accounts for nearly 11 percent of the city's energy as of September and solar energy makes up .11 percent.

The city's legal department is reviewing an agreement to purchase solar power at 23,000 megawatt hours annually starting in 2019. Last year, the city's solar sources were nearly 1,600 megawatt hours. Details of the contract have not been released because it's under legal review.

The Grain Belt Express, a wind-powered transmission line, could also increase the city's wind power use, but the Missouri Public Service Commission's denial of the project is being challenged in the courts. The city council agreed to purchase power from Grain Belt, starting in 2021, at \$3 million over 20 years.