

Senate Utilities
Support for ERO 46
Dorothy Barnett
Climate + Energy Project.
2/19/2020

Chairman Masterson, Ranking member Francisco and members of the committee. Thank you for allowing me to speak to you today in support of ERO 46.

The Climate + Energy Project (CEP) is a thirteen-year-old, state-wide nonprofit, focused on advancing clean energy solutions to benefit the environment and the economy. We work with partners to elevate the connection between climate change and public health, provide education and outreach around clean energy technologies like wind and solar, intervene at the Kansas Corporation Commission and advance policy solutions here at the Kansas Statehouse. The Clean Energy Business Council (CEBC) is a program of the Climate + Energy Project. The Council is made up of businesses and organizations who support the transition to a clean energy economy. This diverse group represents a variety of clean energy industries including renewable energy, energy efficiency, lighting, manufacturing, electric supply, engineering and more.

Today, you'll hear from several supporters of the Governor's ERO 46 to create an independent energy office. I'll be surprised if you hear from any opponents. In each of the responses you heard during the London Economics responses, each person who spoke said, we're not against a state energy plan, with some caveats; who will be involved in its creation, who will manage the process, if there's not a hidden green agenda. I'm reattaching my London Economics response to this document, and point you to all the reasons we support a state energy plan and an independent office that has the resources and expertise to manage the robust stakeholder process that will be needed to create the kind of state energy plan Kansas needs. Yesterday, Senator Sullentrop asked for examples of good energy plans - I'd point you all again to Iowa and North Carolina as our favorites.

I'm also attaching to my testimony, a letter to the House members asking them to vote no on House Continuing Resolution 6031, which would kill ERO 46 and bring the state energy planning process to a halt. As you can see, this letter is signed by more than twenty five businesses, faith groups, environmental and clean energy organizations. Additionally, it's signed by organizations working in agriculture as well as those who work with children.

Kansas needs to plan for the energy transition we're already facing, and it makes the most sense to have an independent agency manage the process. But more than that, Kansas needs an agency that is able to look beyond the near-term issues we're facing and convene conversations around what's on the horizon. Today I learned about something called agrivoltaics. I'm attaching the article to my testimony for those who are interested in learning more.



In the United States, less than 5 megawatts' worth of solar arrays have crops planted beneath them, according to the National Renewable Energy Laboratory, or NREL. That's barely a speck of the country's 71,300 megawatts of installed solar capacity. The farm-plus-solar sector is relatively bigger in Japan, where the concept first emerged over a decade ago. Hundreds of projects now exist, including a 35-megawatt solar array that hovers over fields of ginseng, herbs, and coriander.

Proponents say that this approach could allow for widespread renewable energy development without displacing much-needed land for food. Recent studies suggest that it could lead to more efficient energy and crop production by creating a cooler, moister microclimate.

Our friend Paul Johnson has been telling us for years that 90% of the fruits and vegetables that are consumed in Kansas are grown elsewhere. Commodity crops are an important part of the Kansas economy but they do not feed our people. If we rely on California or Mexico for our produce and there is drought there, as there has been several times over the past several years, then we don't have fruits and vegetables, or at least we can't afford them. Paul says that if we repurposed 150,000 acres of our 22 million acres of cropland in production we could produce enough fruits and vegetables to supply 100% of our basic produce needs.

In a recent test in Arizona, scientists compared crops planted under solar panels with those grown in direct sunlight. They found that total fruit production for red chiltepin peppers was three times higher on the plots under the panels, and cherry tomatoes

doubled production. Some of these plants used significantly less irrigation water, in part because the shaded soil retained more moisture. Solar panels placed with plants were also substantially cooler during the day — and therefore operated more efficiently — than the usual ground-mounted arrays, according to the study last year by NREL and the Universities of Arizona and Maryland.

This is the kind of economic opportunity where agriculture and energy can and should work together as we look toward the future for Kansas. A fully staffed independent energy office could bring together agriculture, energy, and water interests to explore how Kansas can create prosperity and resilience for our state.

As a committee you have been working toward lower rates for your constituents since you first passed Senate Resolution 1612 in March of 2018. There was bi-partisan support for the electricity rate study. Kansans want a robust state energy plan for the future, and they're counting on you all to ensure it will be done with a staff that has the resources, expertise and guidance to do it right.

Please support ERO 46.

Cash-strapped farms are growing a new crop: Solar panels

By [Maria Gallucci](#) on Feb 18, 2020 at 3:50 am

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The Kominek family farm is a green expanse of hay and alfalfa in northern Colorado. The family has planted and raked crops for half a century, but as yields declined over recent years, the farm began losing money. In late 2017, Byron Kominek went looking for more profitable alternatives, including installing solar panels and selling electricity to the utility. But Boulder County's land-use codes made it difficult to use their 24 acres for anything but farming.

So the Komineks found a compromise: a solar array with plants growing beneath, between, and around rows of photovoltaic panels.

Construction is slated to begin this spring on a 1.2-megawatt solar array on the Kominek farm. Some 3,300 solar panels will rest on 6-foot and 8-foot-high stilts, providing shade for crops like tomatoes, peppers, kale, and beans on a five-acre plot. Pasture grasses and beehive boxes are planned for the perimeter.

Now there will be potentially more food grown in the community, more renewable energy, and more revenue to local farms," said Kominek, 37, whose late grandfather Jack bought the farm in 1972.

If successful, the project could serve as a model for other cash-strapped farmers, by transforming underperforming fields into potentially money-making hubs of clean energy and fresh food.

Xcel Energy, the state's biggest utility, has agreed to pay for each kilowatt-hour delivered from the Kominek's solar array to the grid. Their neighbors can buy into the project, too. Participants invest in a percentage of the array, then receive credits on their monthly utility bills. Their investment also helps defray some of the farmers' upfront construction costs.

The vegetables will be sold through a community farm-share program, which allows neighbors to invest in the project in exchange for boxes of produce.

This marriage of agriculture and solar photovoltaics — known by the awkward name "agrivoltaics" — is an emerging niche within the broader solar power industry.

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farm-plus-solar sector is relatively bigger in Japan, where the concept first emerged over a decade ago. Hundreds of projects now exist, including a 35-megawatt [solar array](#) that hovers over fields of ginseng, herbs, and coriander.

Proponents say that this approach could allow for widespread renewable energy development without displacing much-needed land for food. Recent studies suggest that it could lead to more efficient energy and crop production by creating a cooler, moister microclimate.

In a recent test in Arizona, scientists compared crops planted under solar panels with those grown in direct sunlight. They found that total fruit production for red chiltepin peppers was three times higher on the plots under the panels, and cherry tomatoes doubled production. Some of these plants used significantly less irrigation water, in part because the shaded soil retained more moisture. Solar panels placed with plants were also substantially cooler during the day — and therefore operated more efficiently — than the usual ground-mounted arrays, according to the [study last year](#) by NREL and the Universities of Arizona and Maryland.

A project in South Deerfield, Massachusetts, delivered [similarly promising results](#). Early field tests showed that Swiss chard, broccoli, and similar vegetables produced about 60 percent more volume compared to plants beneath a full sun.

Kominek's project, called [Jack's Solar Garden](#), will provide more opportunities to study agrivoltaics. NREL, in nearby Golden, Colorado, plans to track how plants and panels perform together in Boulder County's hot, dry climate. "If the structures help keep in moisture, and we have less evaporation, we'll need less water to grow the same amount or even more [crops]," said Jordan Macknick, the lead energy-water-land analyst for NREL.

Macknick leads NREL's [low-impact solar initiative](#) along with biologist Brenda Beatty. Since 2015, researchers have developed more than 25 sites around the country that combine solar panels with food crops, native vegetation, or pollinator-friendly plants.

Jack's Solar Garden will be the biggest of the group and the first to include all three types. NREL is also adding solar projects in Puerto Rico, including one on a coffee plantation and another one on pasture lands for cattle.

"We're really just at the very beginning of understanding the benefits of agrivoltaics and what they could mean not only for the energy sector but also for the agricultural sector," Macknick said.

Agrivoltaics, also called "solar sharing," first took off in Japan in 2004, after an engineer, Akira Nagashima, developed a stilted steel structure that raises panels 10-feet high. Available land is scarce in Japan, a country with ambitious targets for developing renewable energy. (Not coincidentally, [floating solar arrays](#) — which sit atop irrigation ponds and reservoirs — also got their start in Japan, in 2007.) Recently, Nagashima has begun studying how shade-intolerant crops might fare beneath solar arrays. His

research team [recently found](#) that corn yields slightly improved in a solar-sharing system.

Beyond research sites, however, pairing corn and other cash crops with solar may present significant challenges. On existing plots, smaller tractors can navigate the narrow spaces between rows of panels. But combine harvesters and other industrial equipment are too wide and bulky to fit through the gaps. Most crops grown beneath panels must be picked by hand. The work is manageable at the scale of a community garden, but it can be grueling, back-breaking work at an industrial scale. Farmers are [developing machines](#) to pick strawberries, melons, and tomatoes, which also might bump against the panels.

For farms big and small, a lack of rural infrastructure remains a “key impediment” to boosting adoption of agrivoltaics, said Chad Higgins, an associate professor of biological and ecological engineering at Oregon State University. Power lines and electrical equipment might not be equipped to handle the addition of solar power. Roads and communications networks likewise might need to be expanded to support far-flung operations, he said.

Still, if farmers and engineers can address such hurdles, the potential for agrivoltaics is immense, given how much of the planet’s land is devoted to agriculture. If these “solar-sharing” systems covered even less than 1 percent of the world’s cropland, they could produce enough solar power to meet the world’s annual energy needs, Higgins and other researchers said in [an analysis last year](#). They found that the best places for growing crops are the same areas with strong potential for producing solar power, particularly in the western United States, southern Africa, and parts of the Middle East.

“We have this vision of solar panels out in the desert, in these really open arid areas,” Higgins said. But solar panels are most efficient in climates with plenty of sun and moderate temperatures. Extreme heat can overtax the panels and result in lower electricity production. The same is true for plants.

At Jack’s Solar Garden in Colorado, the solar array construction this spring will kick off a list of related efforts. The Komineks will plant grasses to help prepare the five-acre plot for next year’s vegetable crops, and local members of the National Audubon Society will start planting a large pollinator habitat around the project’s perimeter. The 1.2-megawatt array is expected to begin delivering electricity to Xcel Energy’s grid by early fall.

Byron Kominek said he hopes similar projects will soon follow. In 2018, Boulder County officials [updated](#) the local land-use codes to allow for community solar on land otherwise designated for agriculture, and Kominek plans to help train other farmers how to grow crops alongside solar panels. “The hope is that young farmers will have a better understanding of how to do this, and will go out to already built solar arrays, or planned solar arrays, and find a new profession,” he said.

February 13, 2020
Regarding – Regionally competitive electric rates

Dear House Members,

Last year, as a body, you passed a comprehensive study that would examine how Kansas could lower its electric rates to be regionally competitive. The hired expert completed the first part of the study this January, offering four key near-term recommendations, the first of which is the development of a state energy plan.

This cannot happen without proactive leadership. It requires extensive thought, collaboration, coordination, and planning. Currently, the fitting entity to carry these objectives forward, the Kansas Energy Office, is constrained within the Kansas Corporation Commission with less than one full time staff equivalent. If we are serious about bringing down electric rates while also creating productive programs to help improve Kansas' energy economy, then it's important we make the Kansas Energy Office look more like the Kansas Water Office.

Most states have an independent energy office; Kansas is one of only three states where the Energy Office is housed in the regulatory agency. Due to its limited capacity and lack of initiative, the KCC has not used the energy office to advance any meaningful dialogue or solutions in many years.

We appreciate your support of ERO 46 and ask you to Vote NO on HCR 6031 so Kansas can get to work on achieving regionally competitive electric rates.

Sincerely the under signed businesses and organizations,

Climate + Energy Project
Biostar Renewables
Children's Alliance of Kansas
Climate Action KC
Cromwell Environmental Inc.
FHREEC
Foley
Good Energy Solutions
Green Factor Insulation
Kansas Interfaith Action
Kansas Rural Center
Kansas Sierra Club
Kansas Solar

King Solar
Lutherans Restoring Creation
Metropolitan Energy Center
Native Lands LLC
North Star Comfort
PROSOCO
Solar Design Studio
Stanion
Steph's Garden
Sunsmart USA
Unitarian Universalist Congregation of
Lawrence Social Justice Team

Senate Utilities

Response to London Economics Electricity Rate Study

Dorothy Barnett on behalf of the Clean Energy Business Council, a program of the Climate + Energy Project.

2/6/2020

Chairman Masterson, Ranking member Francisco and members of the committee. Thank you for allowing me to share our response to the London Economics Electricity Rate Study.

The Climate + Energy Project (CEP) is a thirteen-year-old, state-wide nonprofit, focused on advancing clean energy solutions to benefit the environment and the economy. We work with partners to elevate the connection between climate change and public health, provide education and outreach around clean energy technologies like wind and solar, intervene at the Kansas Corporation Commission and advance policy solutions here at the Kansas Statehouse. The Clean Energy Business Council (CEBC) is a program of the Climate + Energy Project. The Council is made up of businesses and organizations who support the transition to a clean energy economy. This diverse group represents a variety of clean energy industries including renewable energy, energy efficiency, lighting, manufacturing, electric supply, engineering and more.

As technology disrupts our current energy system and concerns grow over rising utility costs, it's clear that Kansas needs a comprehensive approach to address the transforming energy environment.

London Economics Inc. (LEI) lists the establishment of a State Energy Plan as one of the top priorities the state should embark on to help achieve regionally competitive electricity rates over time. The recommendation was one of four near-term steps they identified. With technology advancements rapidly changing our energy options, it's important that Kansas adapts its rate-making to provide customers with affordable energy choices. A state energy plan (SEP) will establish guiding principles, realistic objectives and actionable strategies to guide Kansas in its near-term and long-term energy decisions for years to come. Our organization has urged lawmakers to adopt a state energy plan to guide the clean energy transition and are pleased to see this idea supported in the rate study.

In more than 40 states, **State Energy Plans** have been created to capitalize on energy as a key resource and area of strategic importance to the state's economy and economic development efforts. These plans are increasingly seen as an excellent way to set state executive branch and legislative priorities and are a key means of providing strategic direction and guidance in the decisions of state utility regulators, utilities and other state and local agencies. In a majority of states, **State Energy Offices lead or guide the planning process and plan development.**

Over the past two years, CEP has gathered information about state energy plans from national experts including the Building Performance Association (BPA), Midwest Energy

Efficiency Alliance (MEEA) and the National Association of State Energy Officials (NASEO). We have met with experts who've created different plans to learn from their pitfalls and successes. We've shared information and gotten input from our environmental, clean energy, conservation, agriculture, and faith partners, along with the Citizens Utility Ratepayer Board, to discuss and gather support for a Kansas energy plan. Based on this outreach, we would offer up the following:

Process Considerations to think about if the state undertakes a State Energy Plan (SEP).

One of the first steps is to identify who is responsible for developing the SEP. Some states have given this responsibility to their utility commission (MI), state energy office (MO), or executive branch such as the Lieutenant governor (IA). It's important to determine if the technical work will be conducted by state staff (MI) or if the state will hire an outside contractor (MO and IA).

Where the SEP is housed will also impact the plan's success. For example, is the document seen as a purely political document pushed by a single elected official or is there bipartisan buy-in across government branches, agencies and stakeholders? Senate Bill 69, which created the Electricity Rate Study was supported by a diverse group of stakeholders including environmental, faith, industrial end users, and the State Chamber and was passed 37 to 1 in the Senate and 117 to 7 in the House, showing strong bi-partisan support.

Who has control over the SEP and who is able to shape the content is crucial to determining the success of the final product. We believe a broad coalition similar to the coalition backing SB 69 is important to advancing a SEP. Another consideration is whether the SEP will be a general roadmap for the future, or is the intention that it leads to legislative or regulatory action, which is how it worked in Iowa. Recognizing the rapid changes in our energy future, as noted by LEI's presentation to this body on Tuesday, we believe our plan should include recommendations for legislative and regulatory action to ensure Kansas is adapting with the changes and not lagging behind.

Does the SEP authoring entity have the authority to put the SEP's recommendations into action? If not, this will shape the scope and recommendations of the plan. Another key item is to determine Statutory Authority.

- Does the SEP require legislative approval (IN) or require the approval of the utility commission (MI)? Knowing who the decision makers are should be considered, especially when designing a stakeholder process to maximize needed buy-in.

State Energy Plans are not free. Hiring an outside consultant can be needed to write the SEP, provide technical assistance, and/or facilitate the stakeholder process. Some or all of this could be done by a scaled up State Energy Office.

- State Energy Offices receive funding (known as state energy program—SEP—dollars) from the federal Department of Energy (DOE). This money could help finance the SEP process.

- In Iowa, having a state energy plan allowed them to leverage a variety of federal funds for implementation of their plan including funding for biofuels, electric vehicles and low income energy efficiency and buildings programs.

We believe, one of the keys to a successful State Energy Plan is stakeholder engagement.

Having a robust stakeholder process is important not only for buy-in of the plan, but to ensure impacts on recommendations are fully understood and weighed. Dividing and assigning the “planks” of the SEP to working groups is a popular approach. The working group on energy efficiency (EE) for example, would have relevant stakeholders; utilities, businesses, consumer advocates, environmentalists, KCC, EE implementers, academics, and others. They would meet several times over multiple months to provide expertise, discuss potential approaches to energy efficiency, weighing the impacts on each stakeholder group represented with a potential goal of finding a common ground solution with broad benefits to Kansans. The outreach should include town halls where the general public can give input, and structured forums where expert testimony and recommendations are presented, and working group members are able to ask questions and give feedback. It is important to release a draft report and then have a public comment period and face-to-face meetings so that all stakeholders can give

For the past year and a half, CEP has been working with CURB, Sierra Club, the Kansas Rural Center, the Building Performance Association and the Midwest Energy Efficiency Alliance to find common ground on energy efficiency. Kara Saul Rinaldi's response to the London Economics report reflects that effort. We support using the National Standard Practice Manual, which aligns with the London Economics report, to determine which cost effectiveness tests meet our state's goals for energy efficiency. We also support a Pay As You Save™ model for clean energy investments, where those who will benefit from energy efficiency or clean energy upgrades pay for them over time on their energy bills.

We support LEI's recommendation for the KCC to explore Performance Based Ratemaking (PBR). We see PBR as a tool that can be used to help overcome traditional utility business model barriers that flat demand, increased energy efficiency and cost-competitive renewable energy can bring to the existing business model. Some states are using performance based regulations to encourage utilities to deliver energy savings at specific times to optimize the power grid. They can be used together with Energy Efficiency Resource Standards to accelerate strategic demand reductions to help with rising costs.

We look forward to seeing Phase Two of the electricity rate study this summer which will provide a deeper dive into the role of distributed generation, electric vehicles and other issues that may impact regionally competitive rates for Kansas. We appreciate the committee's willingness to hear from stakeholders as part of this process and are happy to stand for questions at the appropriate time.