

**TOWN OF BOONE
SUSTAINABILITY, ECONOMICS AND ENVIRONMENT COMMITTEE
THURSDAY, OCTOBER 11, 2018
5:30 P.M.**

Members Present:	Chairperson Quint David, Vice-Chairperson Harvard Ayers, Benjamin Scarboro, John Prickett, Nicolas Stover and Lee Ball
Council Members:	Sam Furguele and Marshall Ashcraft
Staff Members Present:	Christy Turner - Senior Planner, Marty Little – Planner and Marlene Crosby-Committee Secretary

Call to Order

Chairperson David called to order the meeting of the Boone Sustainability, Economics and Environment committee, held in the Planning and Inspections Department – Upstairs Conference Room located at 680 W. King Street at 5:30 p.m.

Adoption of Agenda

Member Scarboro made a motion, seconded by Member Stover to approve the agenda as written.

Vote:

Aye – All
Nay – None

The motion passed.

Approval of Minutes

Member Scarboro made a motion, seconded by Member Stover to approve the September 13, 2018 meeting minutes as written.

Vote:

Aye – (Ayers, David, Prickett, Scarboro, Stover)
Nay – None
Abstain – 1 (Ball)

The motion passed.

Discussion of the Energy Action Plan

Chairperson David gave a presentation on the history of the work of the Sustainability committee, as outlined in the attached handout (permanently attached). Member Ball said he was appreciative of the information in this presentation because it was helpful for all of the new Sustainability Economics and Environment Committee Members to know about the prior work of the committee.

Chairperson David noted that there are eight members and two Council liaisons on the current committee and that Member Christian Gentry's term is the next one to expire. He reviewed the charge of the committee and answered questions on it.

Chairperson David explained that starting in 2009 the task force was established to develop a renewable energy action plan. In 2010 the "Tenets of Sustainability" were discussed. In 2014 the public survey results were discussed along with the medium-term goal of solar on Queen Street and a short-term goal of local incentives for energy efficiency and energy production. On August 17, 2017 new goals were ratified by Council. A short-term goal was a public-private solar project like in the Depot parking lot, preferably on the Greenway or other high-traffic location in town. A long-term goal was to investigate PACE financing and put together the energy action plan from the 2030 plan action items list and include 100 percent renewable sources for Boone by 2050 and also monitor and manage carbon emissions and compile a zero-carbon report similar to Asheville, North Carolina with 2 percent reduction per year. In 2018, the Boone Town Council allocated \$100,000.00 for the 2018-2019 fiscal year to focus and finish the energy action plan.

Chairperson Ayers explained that in 2014 the committee members were a task force and in 2015 the task force was changed into a Sustainability, Economics and Environment Committee.

Chairperson David explained that on December 15, 2016 the Council approved the Resolution supporting a North Carolina goal of 100 percent clean energy by 2050 and the creation of green jobs.

Chairperson David explained that on January 21, 2016 that Chairperson Ayers requested from Council to approve a Carbon Free and Dividend Resolution. He said on November 9, 2017 the SEEC discussed bio-diesel and carbon reduction and they recommended to Council to set a goal to reduce the carbon footprint by two percent in the Town of Boone. He noted that he could not find the council's vote on this resolution and it may need to be presented again to council for their consideration for approval.

Chairperson David talked about the actionable items: 1: Ask for a motion for Chairperson and Vice-Chairperson to redraft combined resolution to present to Council for 100 percent by 2050 (or 2030) and include two percent carbon reduction goals previously approved by SEEC. 2: Energy Action planning is following the EPA Guide to Community Energy Strategic Planning and the next steps are actions and financing.

Member Scarboro asked about the approval for the fee for fossil fuel use.

Chairperson David talked about the Guide to Community Energy Strategic Planning. He said that the SEEC needs to make sure they are addressing energy efficiency in addition to renewable energy. He reviewed the CESP Timeline and said the SEEC is working on Goals and Strategies, identifying actions, identifying financing, implementation blueprint, monitoring plan, scope and develop Final CESP.

Chairperson David talked about the carbon estimates and equivalents for the Town of Boone electricity, natural gas and fuel gas. He said a professional study might need to be done to get the actual numbers being used by the Town of Boone.

Chairperson David turned the meeting over to Mr. John Ward, Boone Town Manager. Mr. Ward explained that the solar display that was installed on Queen Street cost about \$125,000.00. He said the purchase, installation, maintenance and insurance costs further reduces the ability to add solar in the Town of Boone. As a result, he started looking at options for solar and he knew that New River Light and Power would be getting a new electricity provider, therefore, he invited Mr. Ed Miller from New River Light and Power to this meeting to talk about other options for solar in the Town.

Mr. Ward told the SEEC members that if there is a recommendation made to Council soon, there could be a potential community solar project as soon as next year, if Council approves it.

Mr. Ward said the solar produced electricity would be owned by others with no overhead and you purchase as you go. He asked the SEEC how many kilowatts would we want to start with. He said depending on how many that are selected there may be additional areas on the solar panels that could be purchased by private homes to add on which could help the Town initiate a much larger project. He said we may be able to leverage a portion of our money to where it encourages customers of New River Light and Power to also pay the extra money to get the solar produced electricity. He said the location of the solar would be a very high-profile area. He said this would be a partnership in the marketing and education component because we could show how much carbon is being offset by the solar. He talked about the possibility of partnering with New River Light and Power to have them replant any trees in another location that would need to be removed for the solar installations.

Mr. Ward said that this solar topic is a single year allocation and if it could be worked out to be an annual expectation and get it built into the budget, he said this could be another way of ensuring the success of the SEEC meeting their goals instead of hoping every year there will be money in the budget.

Mr. Ward explained that the Town of Boone would be the customer working in a partnership with Appalachian State University and New River Light and Power.

Mr. Ward turned the meeting over to Mr. Ed Miller, Regional Manager for New River Light and Power. Mr. Miller began his presentation on a 26-page document that he provided to review at this meeting (permanently attached).

Mr. Miller said that NRLP is owned by Appalachian State University and serves the University, Town of Boone and the surrounding community. He said that 90.4 percent of NRLP customers felt renewable energy was important to them and they are interested in purchasing renewable energy. He said the NRLP customers are looking for options and want to have a say in them and they are also concerned with the cost of it.

Mr. Miller explained that NRLP is changing wholesale electricity vendors to NTE which is based in Florida. They will be providing 100 percent of the energy requirements for NRLP. He said that NRLP has a wholesale contract with Blue Ridge Electric which ends in 2022.

Mr. Miller noted that in 2019, Greenwood, South Carolina, Town of Kings Mountain, North Carolina and City of Concord, North Carolina will be using NTE as their wholesale vendor. He said that High Point, North Carolina will also use NTE as their wholesale vendor.

Mr. Miller said that NTE is eager to join the solar market, they understand solar is in the future. He said that NRLP has had discussions with NTE regarding a solar farm. He said NTE is interested in building a solar farm in western North Carolina.

Mr. Miller explained that near the Payne Branch Road and Hwy 321 there are seven acres of property with Solar Radiation Possibilities that are owned by Blue Ridge Electric. Mr. Miller talked about the adding of 700 solar panels on approximately two acres providing 300,000 kwh of electricity per year. He said it would increase the University's total Renewable generation by 250 percent or the power of three University windmills. He said that he wants the vendor to take care of the maintenance of the solar.

Mr. Miller talked about the possibility of the trees being removed from the Community Solar Garden area being placed on the greenway that ties Boone to Blowing Rock or where ever an arborist would suggest they be placed. He said that NRLP is under the Blue Ridge Electric Company wholesale contract and the solar garden will be owned by the University for the first three years and after that it will come back to NRLP. He said the solar can be installed by 2019.

Mr. Miller said if the Town of Boone is interested in being a part of the solar garden, they will benefit limited locations to build, maintenance, claim solar generation in 2022.

Mr. Miller said that the Town would pay 3.5 cents per kilowatt hour which is above the current retail price. He said in 2022 there will be a premium on the solar and decrease in the overall energy costs.

Mr. Ward said the increase would go towards paying for the solar. He said we can look at smaller and very high-priced individual units on rooftops, but he said he needs to repair the rooftops before he can try to put solar on them. He said doing the smaller units might make it closer to 2030 or 2050. Mr. Ward talked about looking into partnerships with others because he is not sure that the Town can do it on their own.

Mr. Ward talked about possibility making solar a requirement for new construction which would help to meet the energy action plan goals. He said this way the solar can be incorporated into the whole project costs and would not need to be added later.

Member Ball asked Mr. Ward if there were further performance opportunities with the sewer plant. Mr. Ward said no because it is by far the largest user of energy and it served by Blue Ridge Electric.

Discussion ensued on why wouldn't the SEEC want to explore partnership opportunities. Chairperson David said it comes down to knowing the exact dollar amount before you can have the partnership conversation with others. Member Scarboro asked how much of the \$100,000.00 is a reasonable amount be used for the exploration of partnership opportunities. Mr. Ward said he had rather speak in conceptual terms and try to work out the best deal. Vice-Chairperson Ayers said he hopes that some of the \$100,000.00 can be used for charging stations. Member Furgiuele talked about the possibility of the Town of Boone raising property taxes to help pay for solar the Town needs. Member Furgiuele agreed with Chairperson David that the amount of money needed for solar needs to be explained in order for the Council to be able to discuss any allocation of funds for it. Member Ball agreed that charging stations need to be installed in the Town of Boone. He also noted that it is difficult to know where the market is going and if we are providing charging stations for tourists or for commuters who may be able to charge their vehicles at home. Member Furgiuele agreed that the Town does need some charging stations to encourage electric vehicles even if this type of technology becomes obsolete as newer solar ideas are formed.

Mr. Ward explained that the \$100,000.00 fund, if not used, would be re-encumbered and kept for solar use. He said that we should not spend any of the money until we know what we need for solar.

Motion and Vote:

Member Scarboro made a motion, seconded by Member Stover for the SEEC to recommend to Council that they move forward with the cost studies and exploring partnership opportunities with Staff research and allocate some of the \$100,000.00 for this opportunity.

Vote:

Aye – (Ayers, David, Prickett, Scarboro, Stover)

Nay – None

Abstain – 1 (Ball)

The motion passed.

Other Matters by Committee Members or Staff

Ms. Turner confirmed that the SEEC is currently scheduled to meet every month on the second Thursday of the month at 5:30 p.m. in the Planning and Inspections Upstairs Conference Room.

Discussion ensued on changing the SEEC meeting location to the Council Chambers located at 1500 Blowing Rock Road. Member Furgiuele noted that it is difficult to drive from Downtown Boone to the Council Chambers located on Blowing Rock Road for a 5:30 p.m. meeting time, if you leave your office at 5 p.m. He said it is difficult because of traffic congestion on Blowing Rock Road near The Standard at Boone. It was the consensus of the SEEC to have their next meeting in the Council Chambers and they would discuss further the possibility of changing the time of the meeting.

Vote:

Aye – All

Nay – None

The motion passed.

Adjournment

Vice-Chairperson Ayers made a motion, seconded by Member Prickett to adjourn the meeting at 7:08 p.m.

Vote:

Aye – All

Nay – None

The motion passed.

Quint David, Chairperson

Marlene Crosby, Committee Secretary

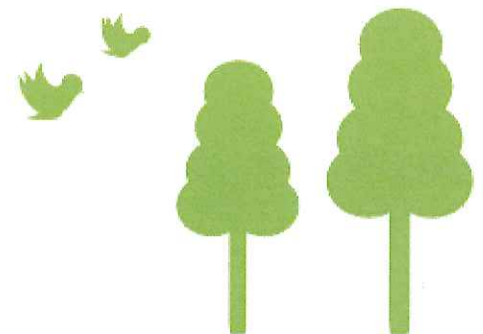
Welcome



TOWN OF BOONE SUSTAINABILITY, ECONOMICS AND ENVIRONMENT COMMITTEE MEETING AGENDA

The Sustainability, Economics and Environment Committee will meet on **Thursday, October 11, 2018 at 5:30 p.m.** in the Planning & Inspections Department – Upstairs Conference Room located at 680 W. King Street. The following items will be on the agenda:

1. **Call to Order**
2. **Adoption of Agenda**
3. **Approval of Meeting Minutes**
 - September 13, 2018
4. **Discussion of the Energy Action Plan**
5. **Other Matters by Commission Members or Staff**
 - Set agenda for next meeting
6. **Adjournment**



Sustainability, Economics, and Environment Committee

Current Membership (8 of 8)

Council:

Sam Furgiuele,
Marshall Ashcraft

Christian Gentry
Christian.gentry.e@gmail.com
Appointed: 12-15-16
Expires: 12-15-19

John Prickett
Johnprickett222@gmail.com
Appointed: 9-28-17
Expires: 1-21-20

Lee Ball
balllf@appstate.edu
Appointed: 6-15-17
Expires: 6-30-2019

Nicholas Stover
stoverna@appstate.edu
Appointed: 1-18-18
Expires: 1-18-19

Nancy LaPlaca
laplaca.nancy@gmail.com
Appointed: 5-17-2018
Expires: 6-30-2021

Chair: Quint David
Q5quint@gmail.com
Appointed: 1-18-18
Expires: 6-30-20

Vice-Chair: Harvard



Committee Charge:

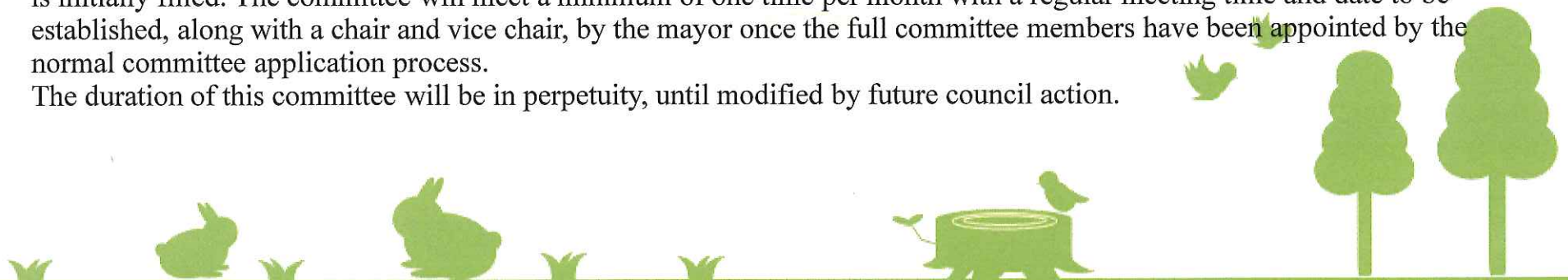
-Town of Boone's Committee on Sustainability, Economics, and the Environment-(S.E.E. Committee)

1. Establish both short and long-term goals and recommendations that the Town of Boone may implement to improve the sustainability and resilience of our community. Maintain and update these goals, as approved by council, in a publicly accessible place on the town website.
2. Conduct public focus groups and surveys on various areas of sustainability-related issues, research and debate methods of community improvement, and present the town council with those recommendations and findings as they are finalized.
3. Establish a yearly public sustainability forum, to be held each Fall quarter at a minimum, that representatives and citizens may participate in for the purpose of reporting effectiveness of current measures and receiving broad public input for new measures.

The committee will comprise of eight (8) individuals and two council liaisons. A preference will be given to three (3) applications who have a professional background in sustainability initiatives, and one (1) with established ties to ASU sustainability programs. Members are not required to reside within the town limits, and may be from the community at large. Three members will carry a one-year term and three members will carry a two-year term.

Sub-committees may be formed, and participation from the public at large highly encouraged. A quorum requires the town code minimum of 50% of the committee in attendance, and committee terms are for one year beginning at the time the position is initially filled. The committee will meet a minimum of one time per month with a regular meeting time and date to be established, along with a chair and vice chair, by the mayor once the full committee members have been appointed by the normal committee application process.

The duration of this committee will be in perpetuity, until modified by future council action.



Energy Action Plan & 100% RE

Quick history on Energy Plan & 100% RE

~2009- '2030 plan' action item:

Establish an energy task force and develop a renewable energy plan.

~2010-Tenets of sustainability:

Energy: We envision the Town of



2014 Goals

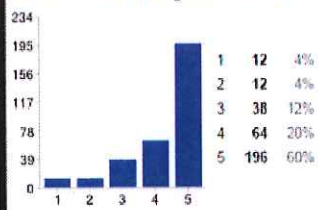
Area	Short Term Goal	Medium Term Goal
Transportation	Community Bike Initiative	Greenway Expansion Plan, and actual expansion.
Energy	Local incentives for efficiency and energy production.	Solar Covered Parking Project on Queen St. Or similar green energy initiative.
Water	Point source pollution study within TOB limits.	Watershed restoration plan in partnership with regional groups.
Food	Curbside composting program for restaurants.	Community center with a focus on winter farmer's market and other local food initiatives.
Education and Outreach	Information and links on TOB website outlining sustainability-oriented plans and initiatives from the TOB and local community organizations.	Collaborative and yearly sustainability focused community workshop held around earth day in April. Official TOB Earth Day events.

Boone Sustainability Task Force Report Nov. 2014

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ENERGY

Solar Covered Parking on Queen St

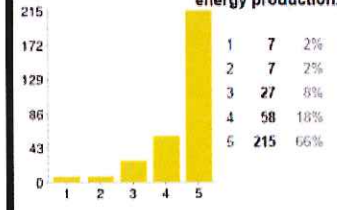


80%

We envision the Town of Boone to be a community whose innovative approaches to energy are upheld as leadership practices. Citizens will be aware of individual and aggregate energy use, engaged in methods for utilizing energy effectively, and educated on new and renewable means of energy production. These efforts will focus on operating our community infrastructure more sustainably while also enabling individuals to

utilize these methods and knowledge in their own homes and businesses.

Local incentives for energy efficiency and energy production.

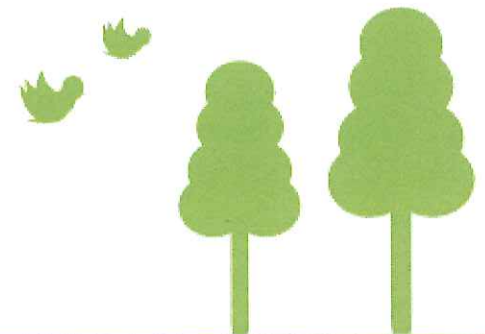


84%

- Local incentives for energy efficiency and energy production (Short-Term) – (planning/inspections) Have staff prepare a list of incentives other municipalities are using to encourage the adoption of energy efficiency and energy production to present to council for consideration. Permit fee discounts, permit prioritization, development ordinance density bonuses, and quick-permitting incentives for green building features were some ideas that needed further staff input.
- Solar Covered Parking Queen St. (Long-Term) – Instruct town staff (manager and planning) to conduct a feasibility study and report back to council including potential costs, savings, and partnerships of a photovoltaic project located in downtown Boone. Queen street and the town-owned parking lot beside the post office have been identified as potential sites, but other sites and possibilities should be considered if applicable.

Boone Sustainability Task Force Report Nov. 2014

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100% Goal Resolution

- December 15, 2016 5:30 PM -Approved
- Harvard Ayers appeared before Council to request they approve a resolution supporting a North Carolina goal of 100 percent clean energy by 2050 and the creation of green jobs. Mayor Pro Tem Mason asked if Council would like to amend the agenda to take action on this resolution. Upon a motion by Council Member Mizelle, seconded by Council Member Clawson, Council moved to add this item to Council Matters in order to take action.



100% Goal for Town

- Part of 2017 Sustainability Goals: Approved on Council Consent Agenda Aug 17, 2017

RESULT: APPROVED [UNANIMOUS]

MOVER: Loretta Clawson, Council
Member

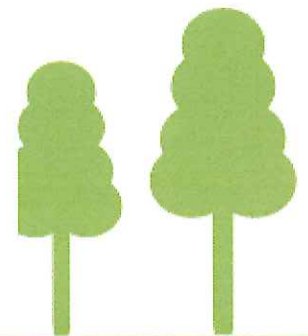
SECONDER: Charlotte Mizelle, Council
Member

AYES: Mason, Clawson, Mizelle, Collins



2017 Goal Summary

Area	Short-Term Goal	Long-Term Goal
Transportation	Promote town wide League of American Bicyclist Bike Month for May, and install bike shelter/maintenance Station in public location.	1. Review existing highway expansion plans, and 2. create greenway/green infrastructure plan.
Energy	Another public/private solar project like in the Depot st. parking lot, preferably on the Greenway or other high-traffic location in town.	1. Investigate PACE financing. 2. Put together the energy action plan from the 2030 plan action items list, and include 100% renewable sources for Boone by 2030 . 2050
Water	Water meter replacement program. Many gallons are wasted due to freezing of lines and this would eliminate much of that.	1. UDO change for 30% of new parking to be permeable. 2. Review of storm-water and runoff quality requirements.
Food	Curbside Composting Program. Coordinate with Appalachian State program and involve county school system if possible.	Community center with a focus on winter farmer's market and other local food initiatives.
Education	Information and links on TOB website outlining sustainability-oriented plans and initiatives from the TOB and local community organizations.	Collaborative and yearly sustainability focused community workshop held around earth day in April. Official TOB Earth Day events.
Environment	Investigate Boone participating in the bee city usa certification, and review of town-wide tree plans.	Monitor and manage carbon emissions and compile a zero carbon report similar to Asheville
2% reduction?		



2% Carbon Reduction

Nov 19, 2015 5:30 PM Town Council Regular Meeting

Harvard Ayers presented a Carbon Fee and Dividend Resolution for Council's consideration. He noted that Council would be endorsing the collection of a fee for all fossil fuels extracted, which will eventually make people conserve more and turn to solar, wind, electric cars and other means. Mayor Pro Tem Brantz felt that the Council needed more information before approving the resolution. Council members Mason and Clawson stated they would also like additional information. Town Manager John Ward stated he would get a list of questions from Council and get with Harvard on those questions in order to provide Council with more information.

January 21, 2016 5:30 PM Approved

Harvard Ayers appeared before Council to request their approval of a Carbon Fee and Dividend Resolution, which would show the Council's support for the concept.

SEE Committee DISCUSSION ON BIO-DIESEL AND CARBON REDUCTION THURSDAY, NOVEMBER 9, 2017

Motion and Vote:

Member Gentry made a motion, seconded by Member Prickett to recommend to Council to set a goal to reduce the carbon footprint by two-percent in the Town of Boone.

Vote:

Aye – All

Nay – None

The motion passed.

Ms. Turner noted that this proposed recommendation would be on the Council's December 2017 agenda.

Cant find council vote- may need to re-approve



RESOLUTION NO. 18-_____

RESOLUTION ESTABLISHING A 100% RENEWABLE ENERGY GOAL FOR THE CITY OF ASHEVILLE

WHEREAS, the City of Asheville adopted a resolution to increase the Municipal Carbon Footprint reduction goal to 4% on April 12, 2011; and

WHEREAS, the City of Asheville adopted a resolution Supporting a Clean Energy Economy on October 22, 2013; and

WHEREAS, the City of Asheville adopted a resolution for a Community Clean Energy Policy Framework on October 27, 2015; and

WHEREAS, the City of Asheville adopted a resolution establishing a joint City, County and Utility Energy Innovation Task Force for the purpose of researching, prioritizing, recommending and implementing recommendations to create energy efficiency, demand side management and renewable energy opportunities to reduce energy use in Buncombe County on March 22, 2016; and

WHEREAS, the City of Asheville adopted a resolution supporting a state goal of 100% renewable energy by 2050, increased protection for standing forests and the creation of green jobs on June 13, 2017; and

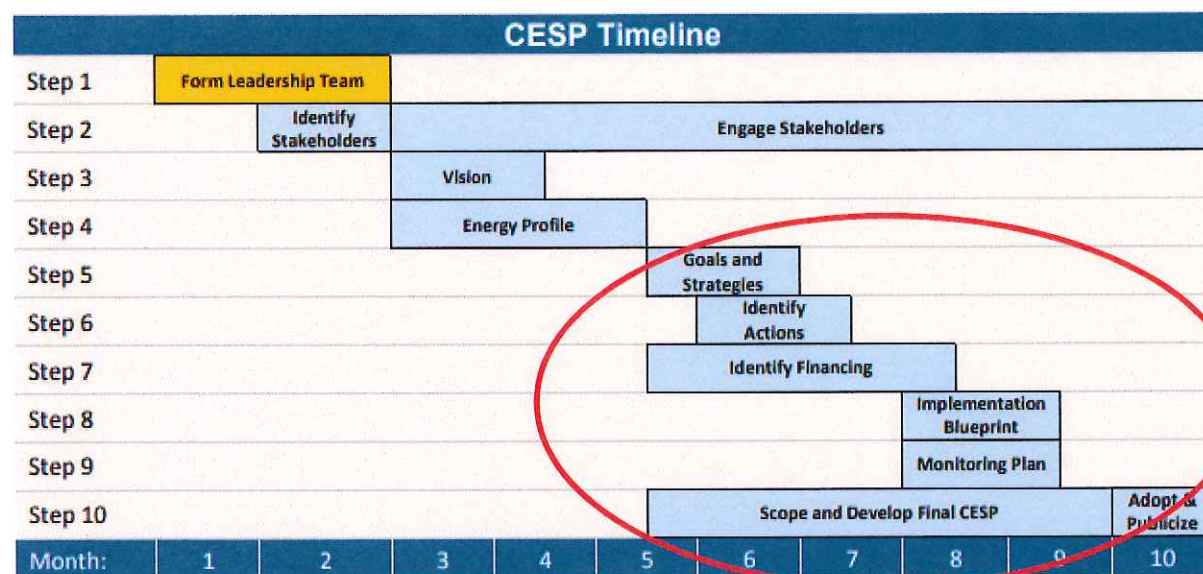
WHEREAS, the City of Asheville adopted a resolution re-affirming the City's commitment to reducing climate pollution in alignment with Council's vision, and, continued support of the principles of the Paris Agreement and the participation of the U.S.A. as a party to the Paris Agreement on June 13, 2017;

Actionable Items

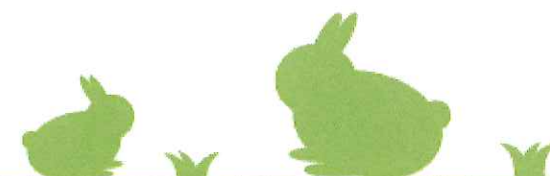
1. Ask for motion for Chair and Vice Chair to re-draft combined resolution to present to council for 100% by 2050 (or 2030), and include 2% Carbon reduction goals previously approved by committee.
2. Energy Action planning is following EPA Guide To Community Energy Strategic Planning... next steps are actions and financing.



Guide To Community Energy Strategic Planning



Potential action and financing to discuss today



Sheet1

Boone NC Municipal Utility Expenses

Compiled 6-7-2017 by Quint David for Sustainability, Energy, Environment Committee
Numbers are approximated.

	2014 Actual:	Electricity	NG/Propane	Fuel/Gas
Dept/Div				
Dept 400 Gov Body	944			
Dept 401 Admin				1,600
Dept 402 Finance				30
Dept 403 Tax collection				
Dept 404 Legal				
Dept 405 Elections				
Dept 406 Fire Station 1	9,301		1,600	
Dept 407 Blowing Rock Rd B	14,498		803	
Dept 408 Brown bldg	12,046		11,287	
Dept 409 Jones House	3,168		242	
Dept 410 Town Hall Bld	15,171			
Dept 415 Fire Station 2	5,272		1,656	
Dept 417 Post Office	5,730		2,913	
Dept 420 Fire Station 3	1,828		661	
Dept 500 Public Safety				86,626
Dept 350 Fire Dept				27,353
Dept 360 Planning				6,449
Dept 600 public works				
Div 401 Street Dept	148,188			45,255
Div 404 Fleet Maintenance				2,199
Div 405 Facility Maint				27,554
Div 801 Public Utilities				1,200
Div 802 Water Ops	21,879			20,050
Div 803 Sewer	8,882			20,050
Div 804 Water Treatment Pl	160,235			3,024
Div 805 Waste Water Treat	333,589		153,986	4,793
Total		\$740,731.00	\$173,148.00	\$246,183.00
price per unit		0.1	2.5	2.25
units		7,407,310.00	69,259.20	109,414.67
Total \$				\$1,160,062.00

Solar SIMPLE Cost Estimate

Avg sun hours per day	4.5
Avg sun hours per year	1642.5
kwatts needed for kwh	4,509.78
Est. cost per watt	1.2 *note: based on google not accurate.
est cost solar full price	\$5,411,733.33
Payoff Time	7.31 years

Note: Estimate is for illustrative purposes only. I highly recommend a professional payback study that includes insurance, maintenance, and other costs.

Carbon Estimate/Equivalents :

Note: from EPA Greenhouse Gas Equivalency Calculator Website

TOB Electricity: 7,407,310kwh \$740k/yr
6,077 tons =
1180 cars - 595 homes - 142k trees

TOB NatGas: 69,259 Therms \$173k/yr
4,198 tons=
815 cars – 411 homes – 98k trees

TOB FuelGas: 109k gallons \$246k/yr
1,072 tons =
208 cars – 105 homes – 25k trees

Total = 2,203 cars – 1,111 homes – 265k trees

Note: 500kw solar * 4.5 sun hrs a day *365 = 821,250kwh

= 9% total TOB municipal electricity use

131 cars, 66 homes, 16k trees (600/11k tons = 5.5% carbon reduction)



Actionable Items

1. Ask for motion for Chair and Vice Chair to re-draft combined resolution to present to council for 100% by 2050 (or 2030), and include 2% Carbon reduction goals previously approved by committee.
2. Energy Action planning is following EPA Guide To Community Energy Strategic Planning... next steps are actions and financing.

We have been presented with an opportunity- should we recommend council give staff the go-ahead for cost studies, partnership opportunities, and to allocate some of the 100k budget for this? Any issues/concerns to include?



Thank You!



**TOWN OF BOONE
SUSTAINABILITY, ECONOMICS AND ENVIRONMENT COMMITTEE
MEETING AGENDA**

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- 1. Call to Order**
- 2. Adoption of Agenda**
- 3. Approval of Meeting Minutes**
 - September 13, 2018
- 4. Discussion of the Energy Action Plan**
- 5. Other Matters by Commission Members or Staff**
 - Set agenda for next meeting
- 6. Adjournment**



NEW RIVER L&P
Serving the High Country Since 1915



NEW RIVER L&P

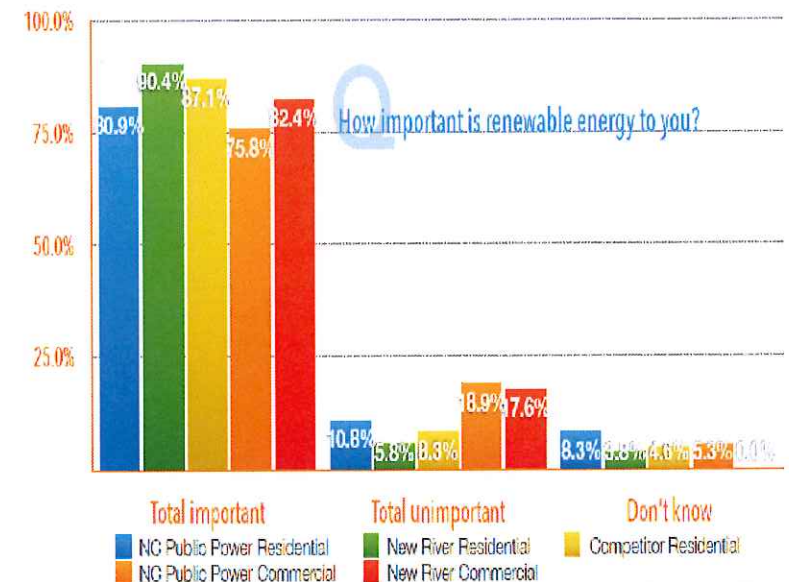
Serving the High Country Since 1915

Meeting future needs of our customers

- June 2017 NRLP Conducted a customer survey
- Over 90% of our residential customers see renewable generation as important
- NRLP's largest customer, ASU has a strong commitment to sustainable/renewable development

Importance of renewables

A strong majority of New River Light & Power's residential (90.4%) and commercial (82.4%) customers reported renewable energy was important to them, however much fewer customers reported being interested in paying more on their bill for their utility to purchase additional renewable energy. There was a larger segment of residents (56.1%) and businesses (26.5%) who indicated their willingness to contribute to renewable energy would depend on "price."

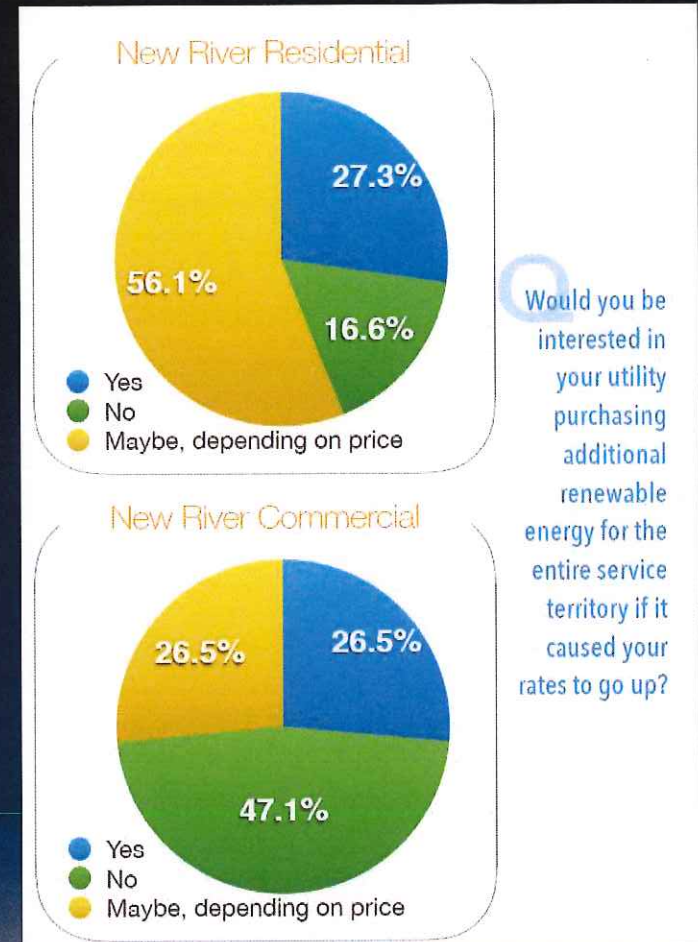


NEW RIVER L&P

Serving the High Country Since 1915

Premium cost to provide renewables is an issue

- Customer study show customers are willing to pay more...but to a point
- ASU was given an opportunity to purchase enough renewables to offset ASU 's entire load, however cost was prohibitive.



NEW RIVER L&P
Serving the High Country Since
1915

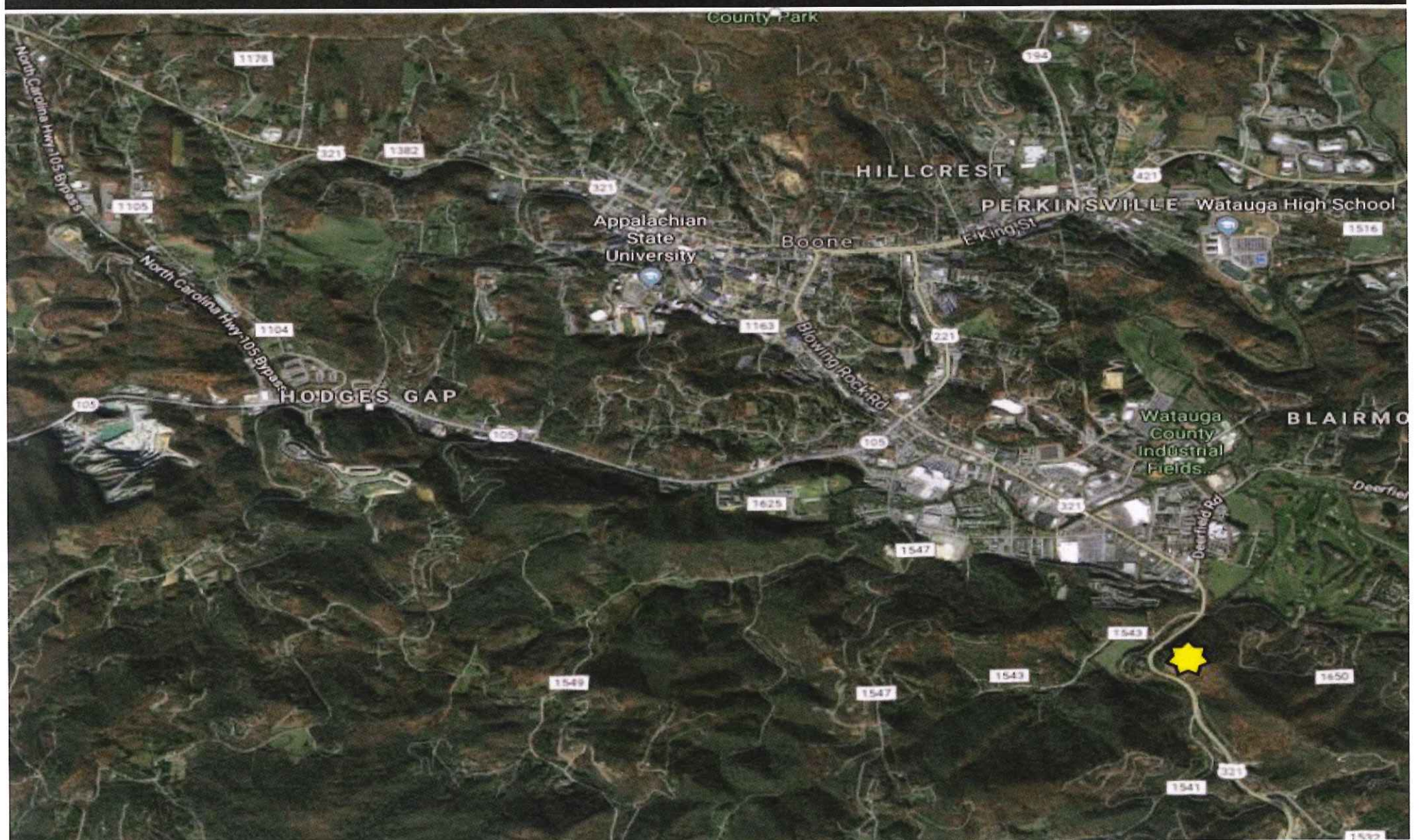
**NRLP's new Wholesale provider, NTE is
eager to install large scale Solar**

- Diversifies NTE's generation Portfolio
- NTE sees an opportunity to meet needs of customers who can not install solar
- Long term goal to build large scale solar farm in eastern North Carolina
- Cost is such that NTE's proposal is less than 50% if NRLP of installed their own solar.

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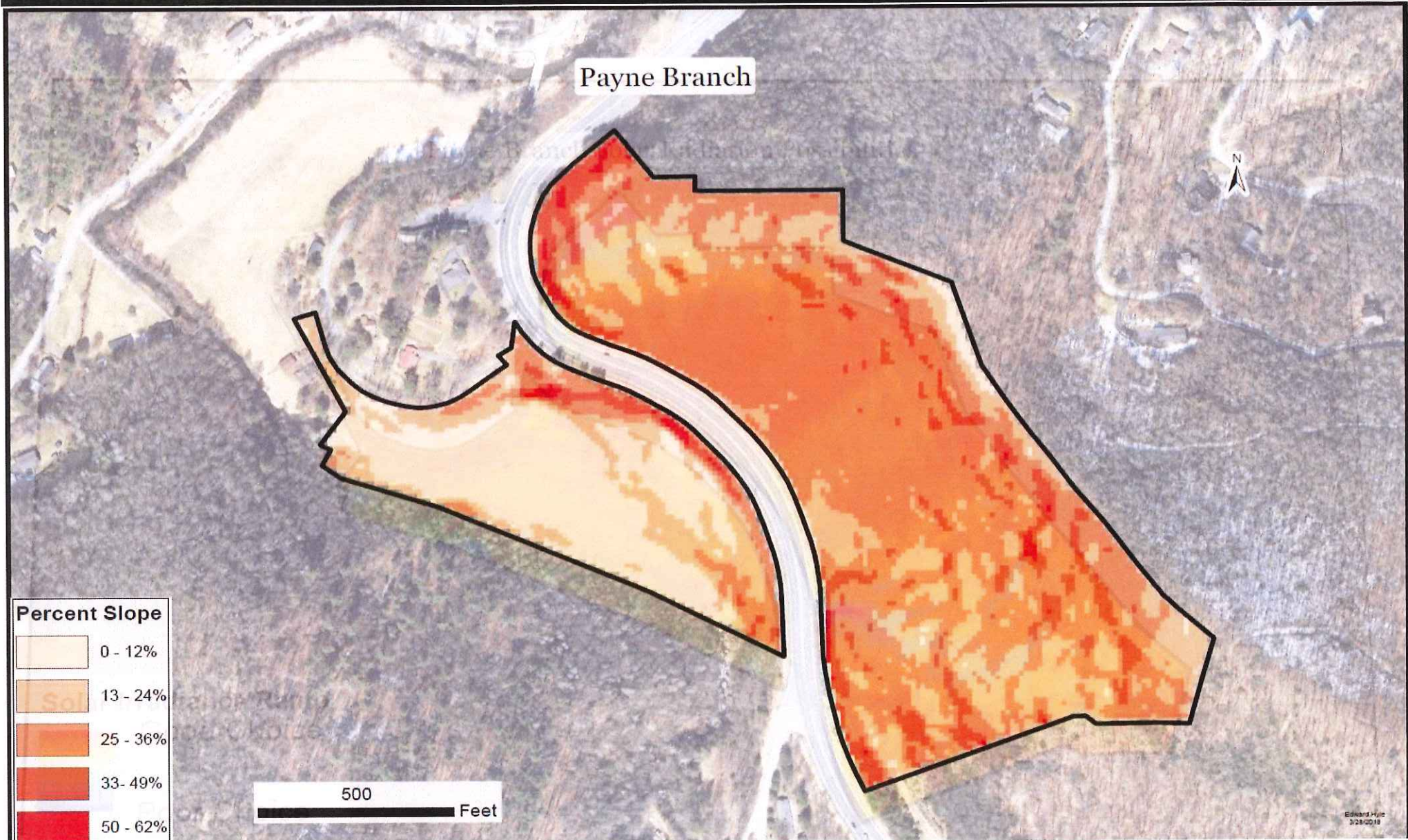
**NRLP Looked at opportunities to meet
customer need and take advantage of
NTE offer**

- Site visible and could promote NRLP/ASU mission
- Strong Solar site to meet NTE's technical needs
- Expandable as NRLP customer's demands increase.



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Payne Branch Solar Radiation Possibilities

Solar Irradiance Ramp
Good Choice
Poor Choice



500 Feet

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Payne Branch Solar Radiation Possibilities

Approximately 7 Acres

Solar Irradiance Ramp
Good Choice
Poor Choice

500

Feet

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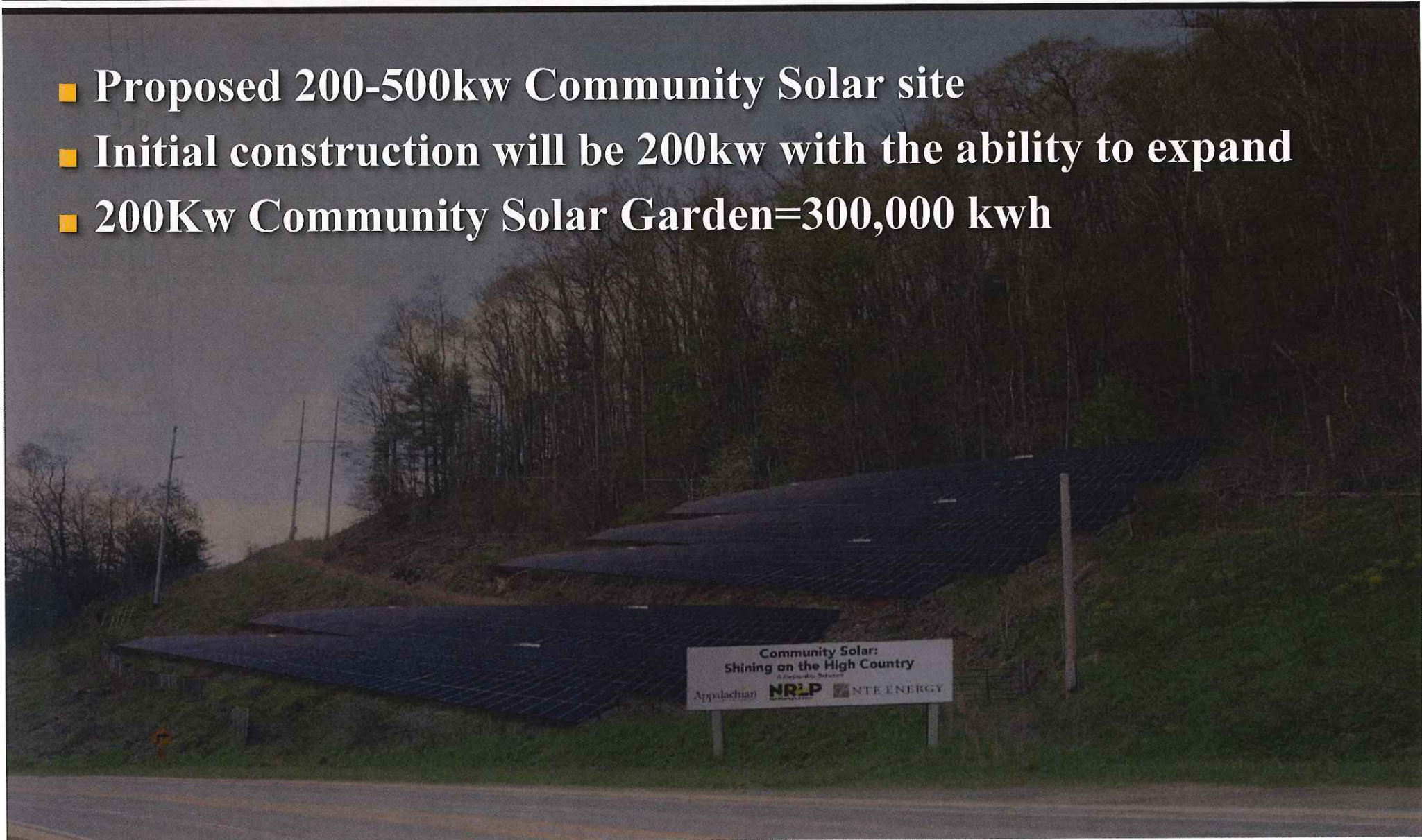
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- Proposed 200-500kw Community Solar site
- Initial construction will be 200kw with the ability to expand
- 200Kw Community Solar Garden=300,000 kwh

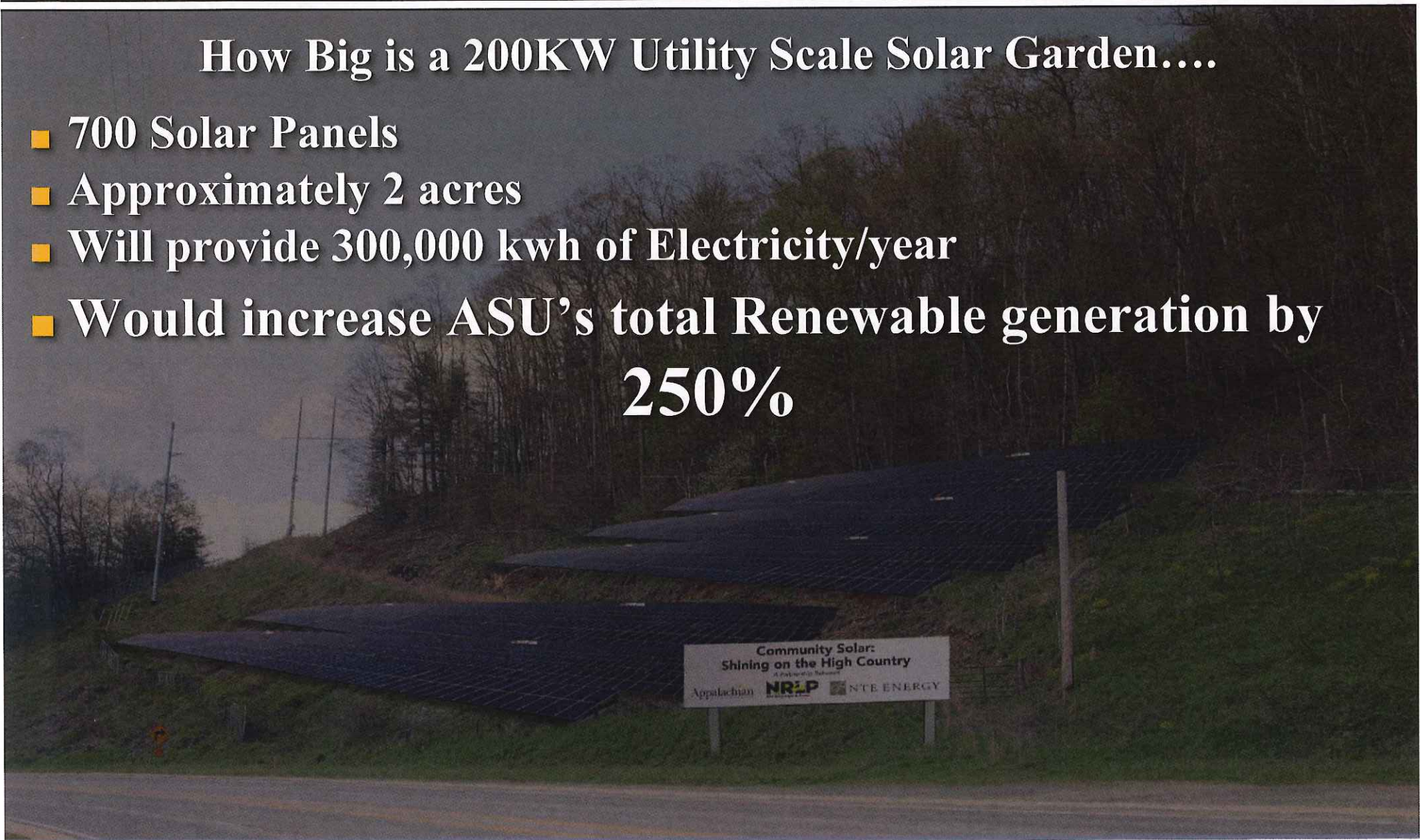


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How Big is a 200KW Utility Scale Solar Garden....

- **700 Solar Panels**
- **Approximately 2 acres**
- **Will provide 300,000 kwh of Electricity/year**
- **Would increase ASU's total Renewable generation by
250%**



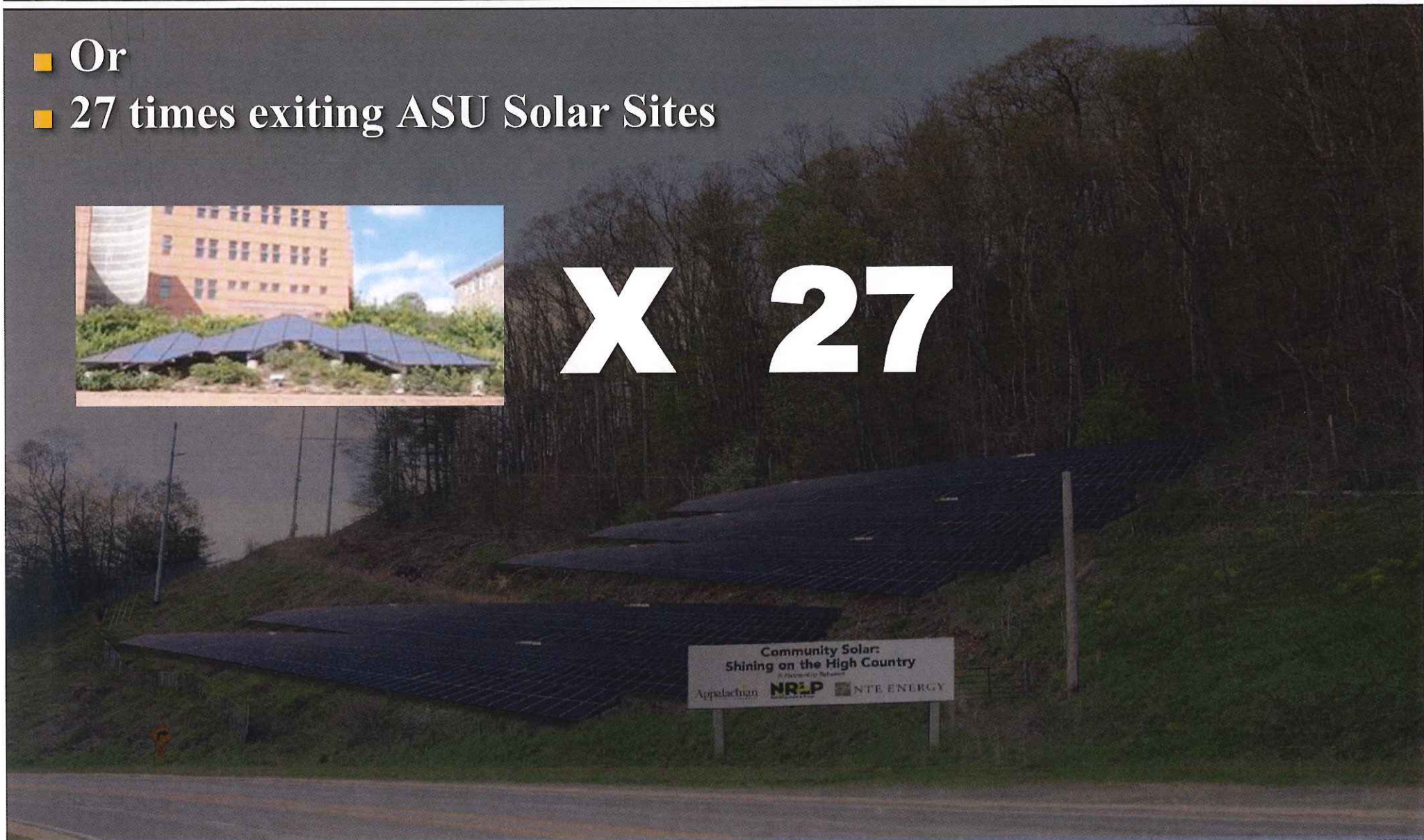
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- Or
- 27 times exiting ASU Solar Sites



X 27

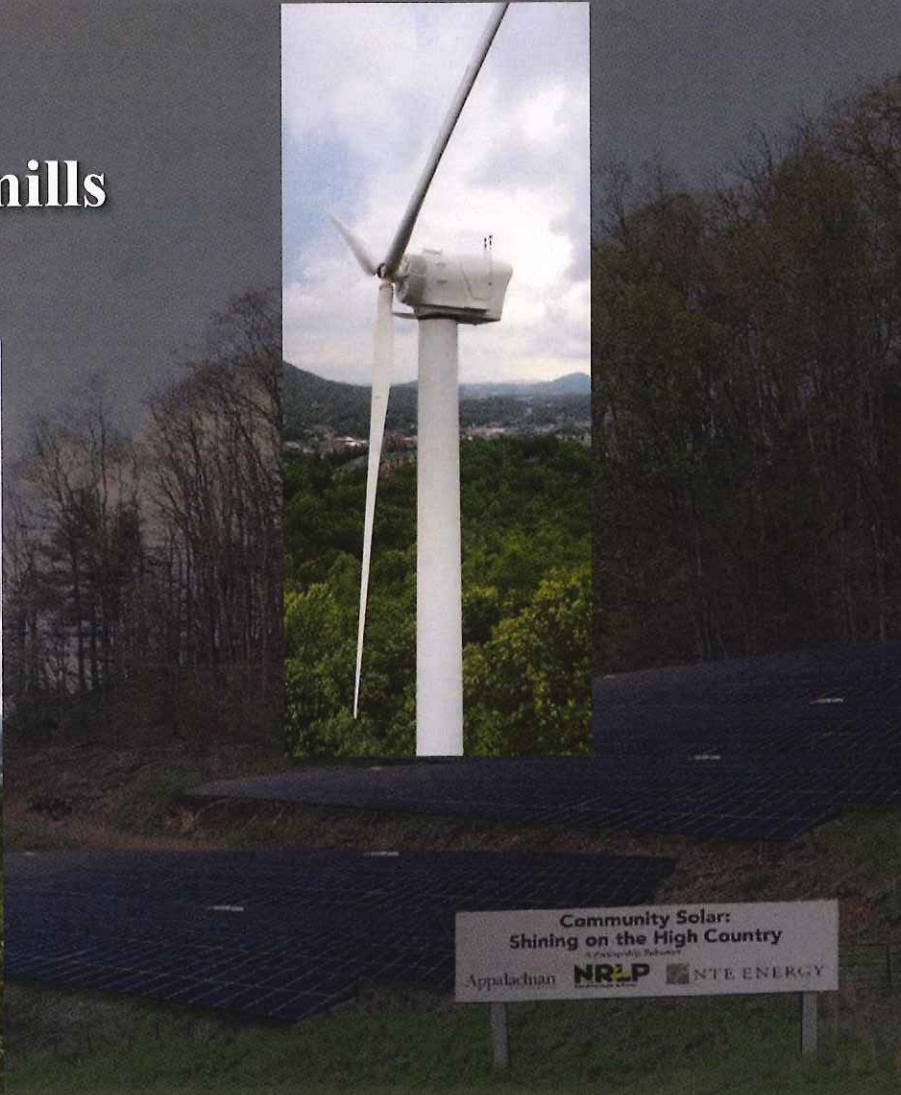


Community Solar:
Shining on the High Country
A Project of the
Appalachian **NR&P** NTE ENERGY

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- Or
- 3 ASU Windmills



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- **Proposed location is on ASU/NRLP Property along one of the busiest corridors to Boone**
- **Ability to promote Appalachian's Commitment to renewables**
- **Can install electronic billboard with applicable Carbon/Energy information**

Total Generation to Date: 250,235kwh
Total Carbon offset to Date: 2M Tons
Current Generation: 127Kw
Current Carbon offset: 125 tons

Community Solar:
Shining on the High Country
A Partnership Between
Appalachian **NRLP** **NTE ENERGY**

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Annual cost of one Digital billboard would be more than 6X the cost of the Solar site.



Digital Bulletins in
Boone, NC (CBSA)
can range from
\$900 to \$2,000
in a 4 week period.

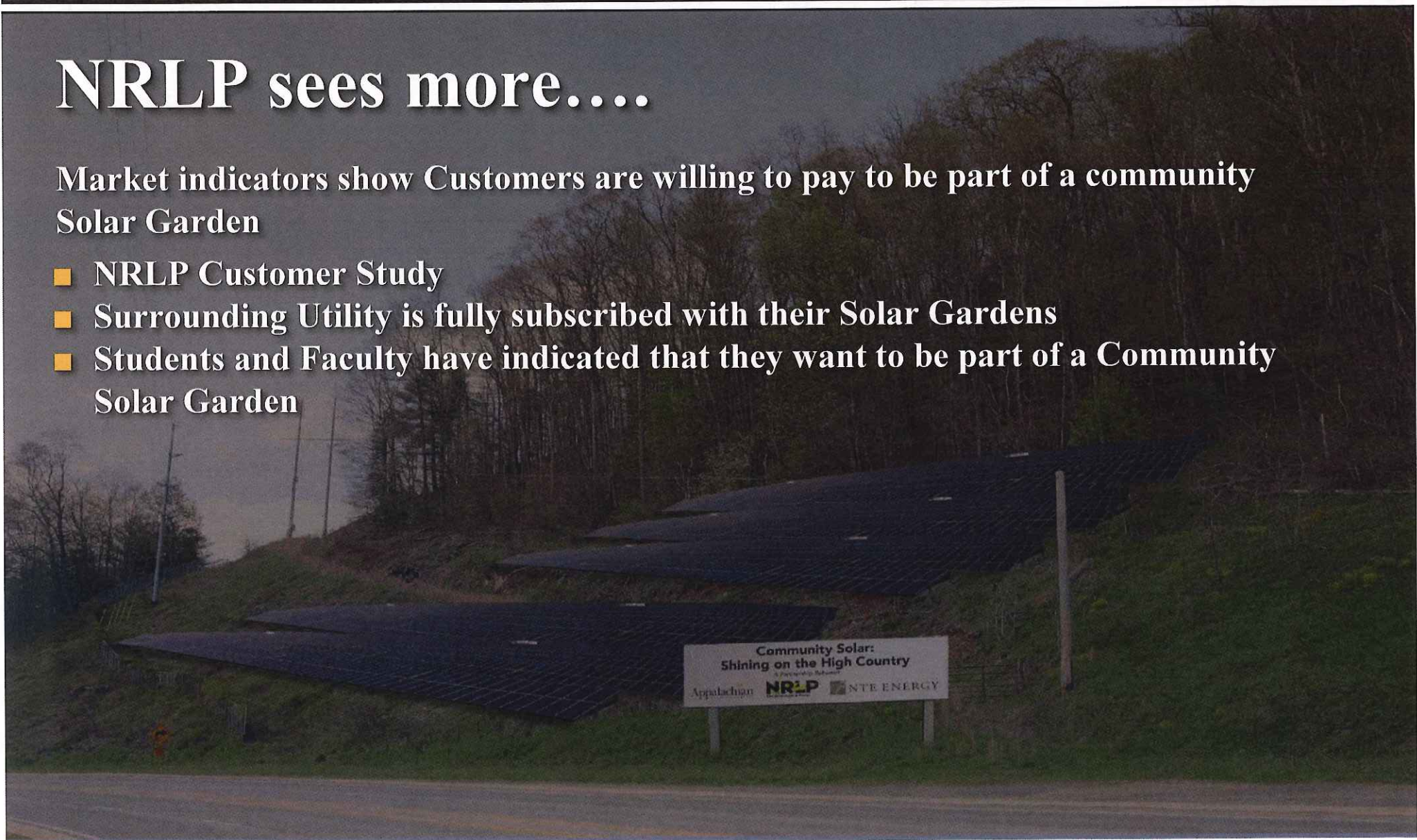
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NRLP sees more....

Market indicators show Customers are willing to pay to be part of a community Solar Garden

- **NRLP Customer Study**
- **Surrounding Utility is fully subscribed with their Solar Gardens**
- **Students and Faculty have indicated that they want to be part of a Community Solar Garden**

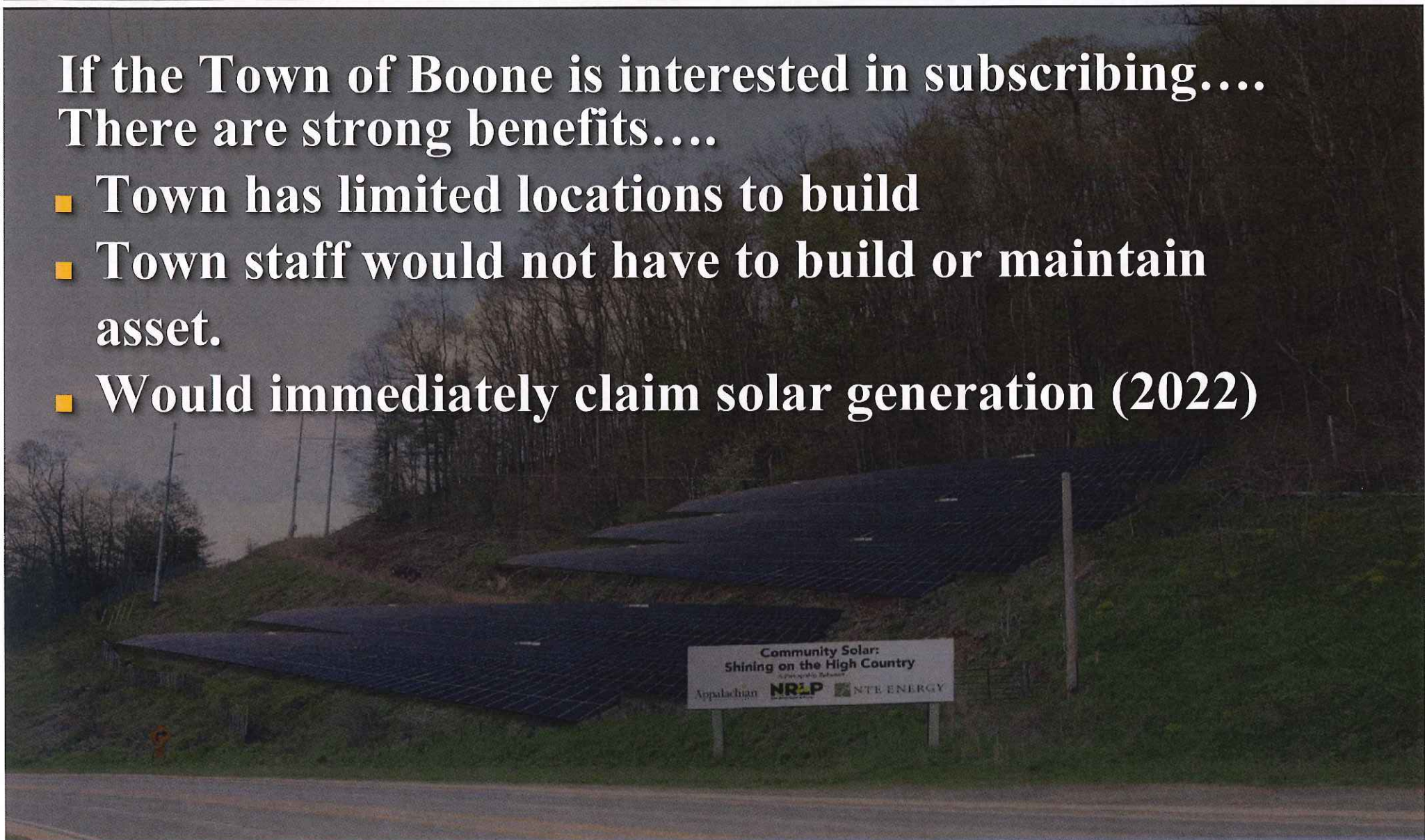


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**If the Town of Boone is interested in subscribing....
There are strong benefits....**

- **Town has limited locations to build**
- **Town staff would not have to build or maintain asset.**
- **Would immediately claim solar generation (2022)**

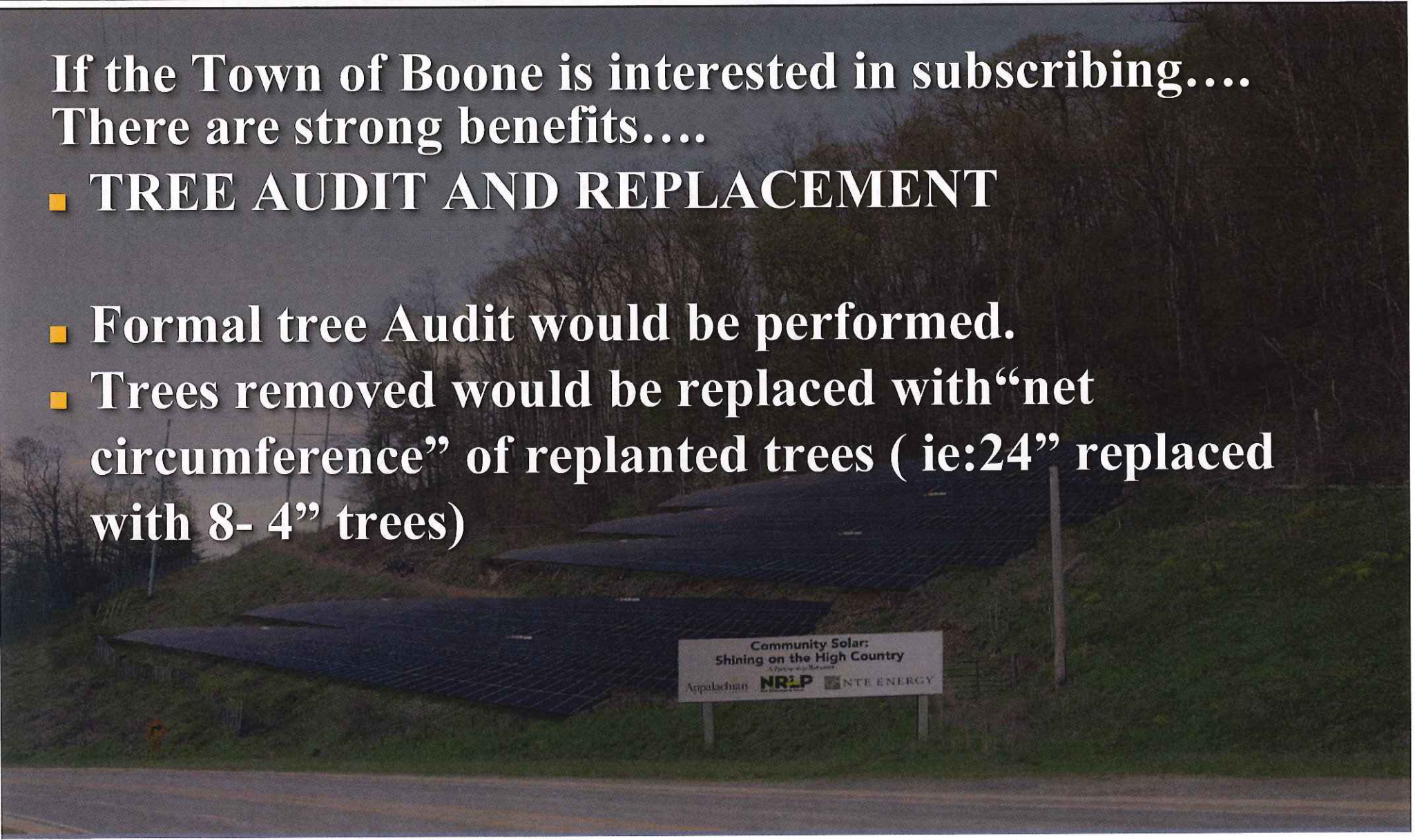


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**If the Town of Boone is interested in subscribing....
There are strong benefits....**

- **TREE AUDIT AND REPLACEMENT**
- **Formal tree Audit would be performed.**
- **Trees removed would be replaced with “net circumference” of replanted trees (ie:24” replaced with 8- 4” trees)**

A photograph of a solar farm on a hillside. In the foreground, a sign reads "Community Solar: Shining on the High Country" and features logos for Appalachian, NR&P, and NTE ENERGY. The solar panels are installed on a grassy slope, and a road is visible in the lower foreground.

Community Solar:
Shining on the High Country
Appalachian NR&P NTE ENERGY

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NRLP sees this as the beginning....

- Ability to Phase in Solar based on customer demand
- Ability to begin program before entering NTE contract



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Under BREMCO Wholesale Contract

- For the first three years (2019-2022) BREMCO Contract ... Part of ASU.
- NRLP & NTE would market jointly with students and Faculty to be part of the community Solar Garden (“AppShine”)
- Similar to the Carbon Free Commuter program
- Estimated cost...\$5.00/ Month
- Customers would have panel(s) dedicated so subscribers can monitor their actual generation
- All who subscribe to the Solar Garden will have the ability to track usage



Community Solar:
Shining on the High Country

Appalachian **NRLP** NTE ENERGY

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Beginning in 2022 NTE Contract

NRLP & NTE would market to all NRLP customers as well as ASU Faculty and Students

- **Students/Faculty who are not NRLP customers can still participate in the AppShine offset**
- **Estimated cost would remain \$5.00/ Month**
- **NRLP Customers will be able to participate in a Solar offset program where any generation will be taken off of their Electric bill**
- **Net savings are intended to be the same regardless if a NRLP Customer or Non customer**



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- **As APPSHINE subscribers increase, we can expand to another local site or.....**

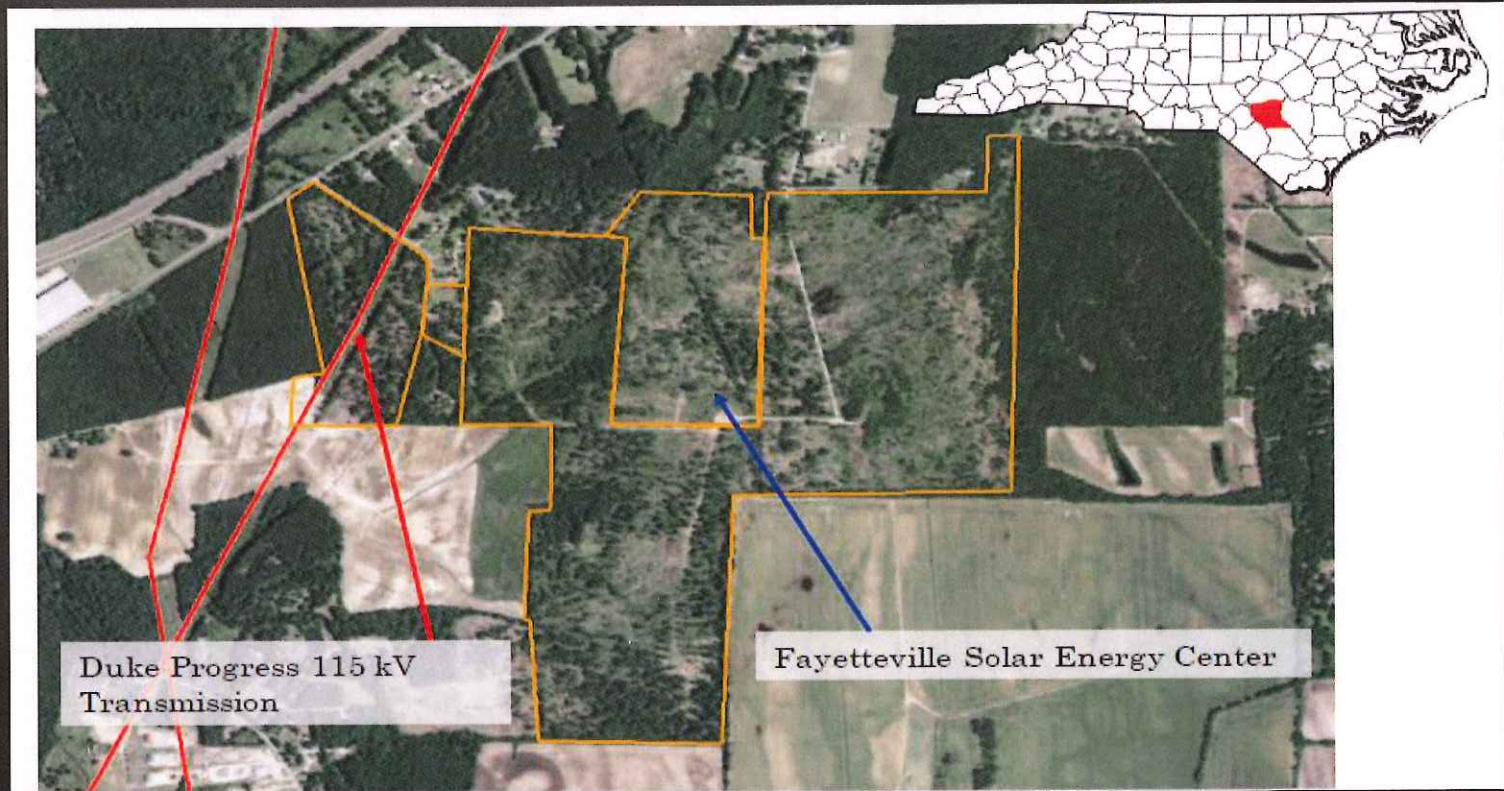


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Beginning in 2022 ...Under the NTE Contract

- Could Expand NRLP Solar Garden to the Large NTE Utility Scale Solar Site as demand increases
- Up to 30MW (Approximately 120% of all of ASU energy needs)
- Less Expensive to NRLP/ASU & our customers
- This site is also Scalable



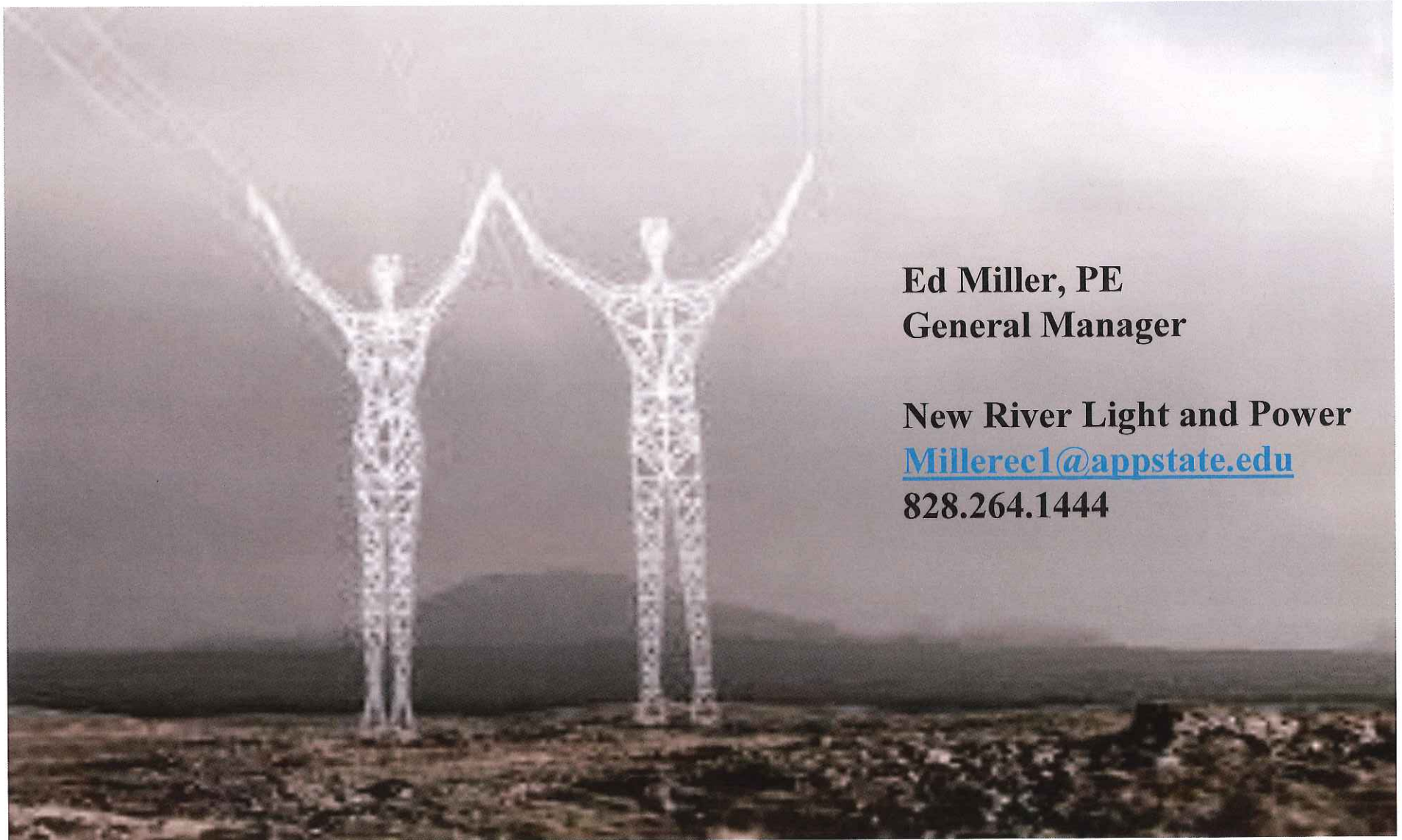
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Questions??



Ed Miller, PE
General Manager

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