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TurningPoint Energy North Kingstown Solar Facilities

April 2, 2018

Adam Beal, Executive Vice President, TurningPoint Energy

Agenda

- TurningPoint Energy company overview
- Rhode Island Renewable Energy Initiatives and Community Net Metering
- Prior development proposal – Overview
- Reimagined development proposal – Overview
- Reimagined development proposal – Community benefits to North Kingstown
- What is community solar and how does it work?
- Considerations for siting solar projects
- Overview of projects
- Alternative Uses Analysis
- Inquiries voiced by local community

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Company Overview & Core Focus Areas

TurningPoint Energy is a clean-tech development, advisory and investment firm specializing in three core focus areas:

1 **Developing** solar, storage, and related clean-tech projects for utility clients across the U.S.

2 **Advising** utilities, think tanks, universities, solar companies and investors.

3 **Investing** in clean-tech projects, real estate, our clients and their communities and charities.

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RI Renewable Energy Initiatives and Community Net Metering

- Rhode Island has the 7th highest electricity rates in the country, at roughly 17-18 cents/kWh (source: EIA).
- Rhode Island's consumption of electricity comes mainly from out-of-state, imported natural gas.
- In 2016, Rhode Island increased its renewable energy goal to 38.5% of total retail electricity to be obtained from renewable sources. In addition, Governor Raimondo signed into law a host of laws to increase solar access to homeowners, municipalities, businesses, and organizations.
- Community Net Metering laws were passed to allow for residential customers to access homegrown electricity generation. Community Net Metering offers the benefit of solar to those who can't, or prefer not to install solar on their homes. These projects enable individual residential customers the ability to source electricity from a community solar project. Members of the community will be able to source electricity from our projects at a discount to current utility rates.
- These projects will assist Rhode Island's goal of increasing homegrown renewable energy, while also helping to drive down residential electricity prices.

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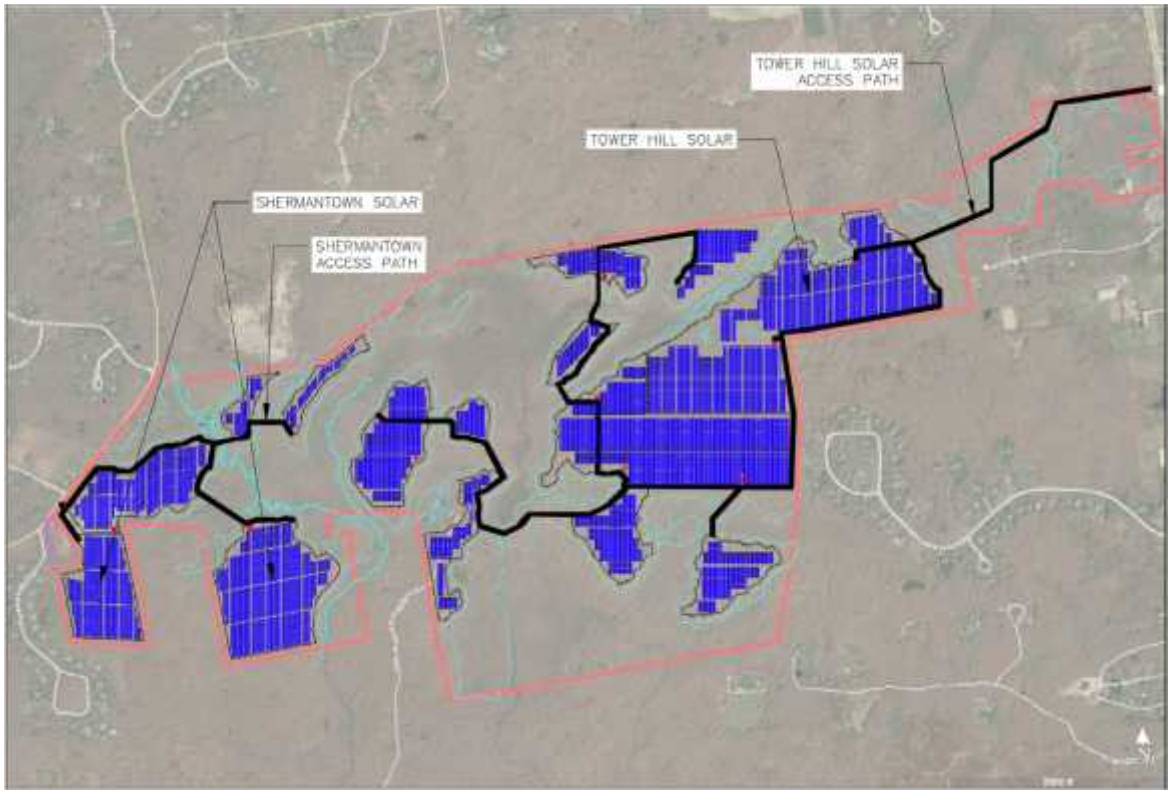
Prior Development Proposal – Overview



- 32.7 MW_{AC} spread across four (4) solar generation plants
- 567 acres, across three properties and eight parcels of land, all currently under option to purchase agreement
- ~200 acres of the properties will be used by the project
- 9-12 month construction process

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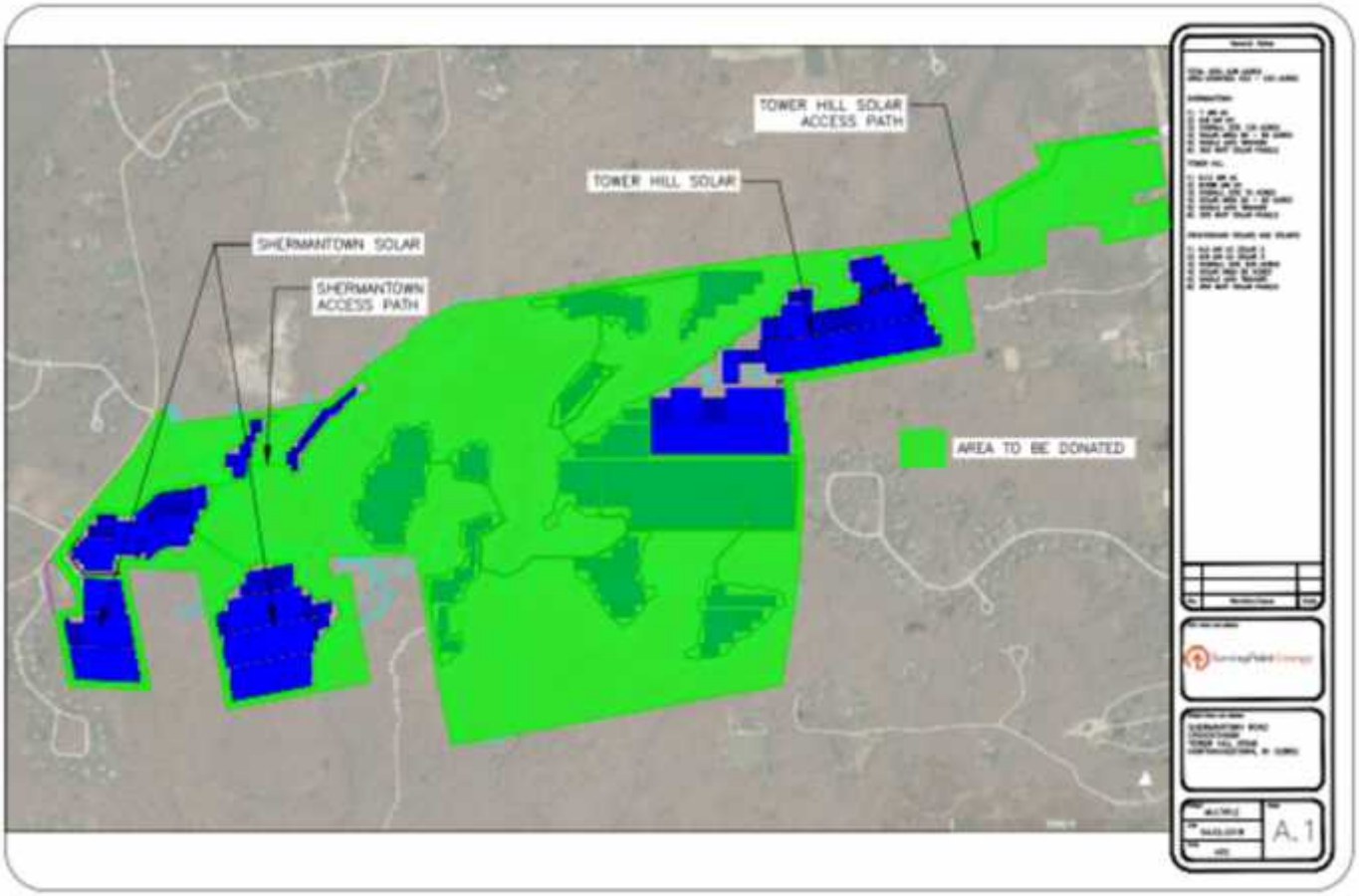
Reimagined Development Proposal – Overview



- 13.12 MW_{AC} spread across two (2) solar generation plants (60% reduction in project sizing)
- 567 acres, across three properties and eight parcels of land, all currently under option to purchase agreement
- Considerably smaller footprint than in prior plan
- 7-9 month construction process
- Majority of site will be dedicated to conservation immediately following all approvals
- Remainder of site will be dedicated to conservation immediately following projects' decommissioning

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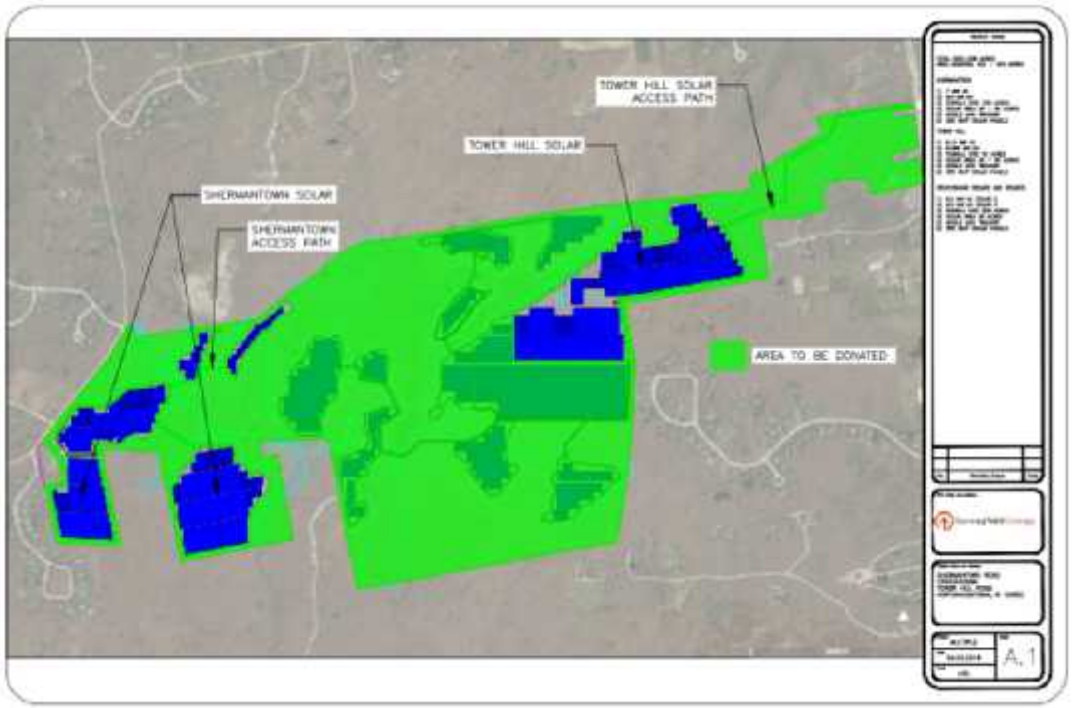
Community Benefit #1 – Majority of site immediately dedicated to conservation

- TurningPoint Energy takes environmental concerns very seriously, and as a demonstration of this commitment is willing to place two areas of the site into immediate permanent conservation upon project approvals:
  1. All wetland, wetland buffer, or stream buffer areas on the site
  2. The majority of the central (Cruickshank) site

- Final acreages and boundaries will be determined following local and state (RIDEM) permitting, but at this time are estimated to total over 400 acres of lands to be immediately placed into conservation

- The solar arrays will be placed only in upland areas. TPE is working closely with RIDEM to identify wetland crossings with the most minimal impacts in its final design.



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Community Benefit #2 – Upon decommissioning, remainder of site dedicated to conservation

- TurningPoint Energy takes environmental concerns very seriously. As a demonstration of this commitment, following the useful working life cycle of the proposed solar facilities, TPE is committed to dedicating all remaining acreage on the site to permanent conservation. At that time, the entirety of the 567-acre site would be forevermore protected from permanent development.

- In a very real sense, as solar is a temporary use, it saves the land from permanent development, and our proposal would prevent urban sprawl or other forms of permanent development in the area into perpetuity.

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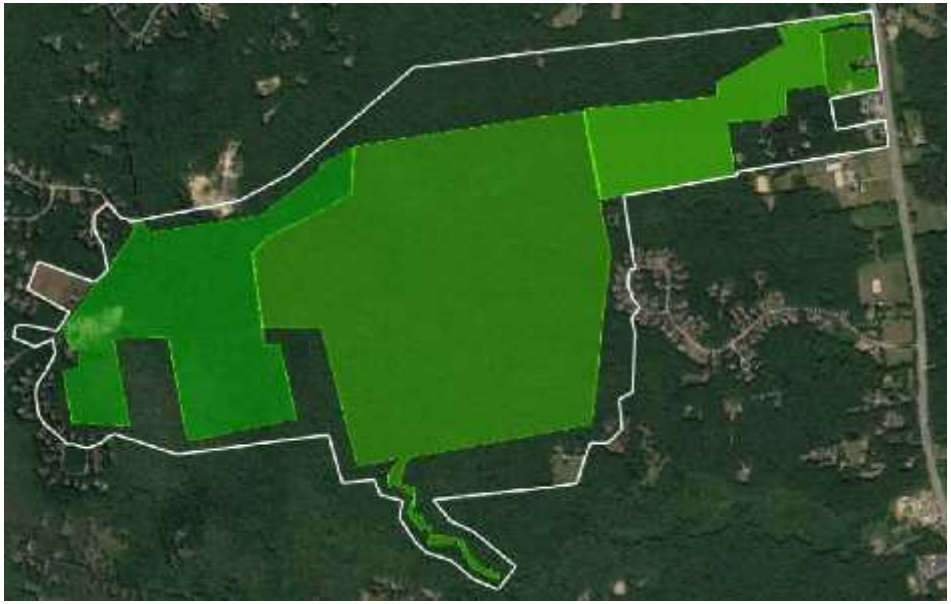
Community Benefit #3 – Discounted Renewable Energy to NK Residents

- As part of the first community net metering project to ever be implemented in the State, TPE is offering a special community net metering offer:

- **100% discount of electricity bill, by means of free net metering credits for the next 25 years, open to interested residential abutters to the site (60).**
  - All interested neighborhood abutters identified in the image to the right will be eligible to receive 100% discount of electricity bill for the next 25 years.
  - ~$126k estimated average value over duration of offer.

- **50% discount of electricity bill, by means of free net metering credits for the next 25 years, open to all residents of North Kingstown, subject to first 100 customer cap.**
  - All North Kingstown residents can sign up to subscribe to our North Kingstown solar projects.
  - First 100 subscribers not abutting the property will receive credits equal to 50% of their last 3 years average usage
  - ~$63k estimated average value over duration of offer.



Note: Exact saving values varies depending on individual usage. Savings estimates based on estimates of average usage data. Assumptions include: 6% discount rate, 67 MWH annual usage.

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Additional Community Benefits

- **Environmental:** Reduction of pollutants into the local atmosphere (all per megawatt of installed capacity):
  - ~2,500,000 pounds of atmospheric carbon annually eliminated
  - The equivalent of ~129,000 gallons of gasoline eliminated
  - The equivalent of ~150 passenger vehicles removed from our streets
  - The equivalent of ~18,000 light bulbs eliminated per year
  - Planting of pollinator-friendly groundcover – creates new habitat for bees, birds, small mammals and other wildlife. Over the life of the solar facility, the equivalent of ~57,000 trees planted for 40 years. (At ~13 MW, that is equivalent to ~750,000 trees planted.) Solar sequesters far more carbon than do trees (27x, in our analysis).

- **Taxes:** ~$1.97mm in personal property tax generated for the Town, a ~258% increase over current use; significant economic benefit to the community without taxing community infrastructure (see OER Rules and regulations for taxation of solar systems, allows for personal property tax on system at $5,000/MW/yr). Also an additional real property tax increase.

- **Jobs**: Development process already utilizing various local legal and land study firms expertise
  - Construction project will create 100 – 125 jobs over a 6 – 9 month process and will attempt to subcontract locally as much as practically possible
  - Regional operations and maintenance service firm will service the project site over the long term (likely Rhode Island-based firm)

- **Community Investment:** Portion of proceeds from the project will be used for investment in local community initiatives, as suggested by local leaders/stakeholders

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How does community net metering work?

1. Customer subscribes to TPE's solar facility by signing a 10-25 year Solar Subscription Agreement at a discount to current all in retail rates.
2. Electricity generated delivered to National Grid.
3. Customer receives a **bill credit** from National Grid for its share of the solar electricity produced on next bill.
   - ❖ Customer receives 2nd bill from solar project at a discount to bill credit value received.

New Utility Bill

DETAIL OF CURRENT CHARGES

Delivery Services

Service Period	No. of days	Current Reading	Previous Reading	Total Usage
May 13 - Jun 12	30	366 *Actual*	1379 *Actual*	-1013 kWh

METER NUMBER [redacted] NEXT SCHEDULED READ DATE Jul 15

RATE Small C&I Rate C-06

Customer Charge		10.00
LIHEAP Enhancement Charge		0.83
Renewable Gen Credit	0.12549 x -1013 kWh	-127.11
Total Delivery Services		**-$ 116.28**

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Considerations for Siting Distributed Solar Projects

- The utilization of brownfield or contaminated sites to the extent possible
- Electrical Infrastructure – projects need to be near utility's distribution system with enough available capacity and within a few miles of substation
- Local land use ordinances allow development of solar
- Any significant development constraints onsite can be avoided/mitigated – biological, wetlands, jurisdictional waters, archeological resources, hazardous materials, topography
- Workable soil conditions with sufficient depth for tracking systems
- More favorable site characteristics = less land used

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Solar projects that have not implemented best practices

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What should ground mounted solar projects look like

SMECO Solar

MSEC 1

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Project Overview- Why This Site?

- Significant capacity available on adjacent distribution lines, a relative rarity in Rhode Island
- Project, as proposed, would meet requirements for a Special Use Permit under the January 2018 solar zoning ordinance
- The property has frontage and legal site access along Tower Hill Road to the East, and Shermantown Road to the West
- Mature vegetation on outside edges of parcels would allow for complete screening of the projects from nearly all off-site locations; where gaps exist in the existing natural screening, robust supplemental vegetative screening would be added
- Soil conditions that allow for efficient tracker system
- Able to identify ready, willing and able land owners agreeable to a sale or lease of their properties, at pricing that “pencils”

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Private Property, Alternative Use Impact Potential

- These properties are privately owned, not dedicated open space. As such, the current owners have private property rights, including the right to sell the property for development. If solar is not approved for the site, this is a likely scenario.
- Under the current zoning, 40 single-family homes could be developed *by right*
- Residential development is permanent – the land will never revert to another use, and habitat will be permanently destroyed
- Development of the site for 40 single-family homes would almost certainly necessitate the removal of 100-150 acres or more of existing forest
- Residential development brings with it impervious surfaces in what would be many miles of new asphalt roadways, pesticides on lawns that could threaten neighboring wetlands, a required expansion of community infrastructure, and, at an average of 2.2 children/home, an estimated 88 new children in the public school system
- 88 children x ~$16,000 per pupil = $1.4mm in new economic burden on the town
- Assume $8,750/year in tax revenue per home = $350,000 in tax revenue. Budgetary shortfall of >$1mm.
- There may also be opportunities for more dense affordable housing development on the site

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Solar vs. Housing

	Solar (as proposed)	Housing (40 single-family)
Use of Land	Temporary use and then permanently protected	Permanently developed; will never revert
Environmental	Permanently protected areas; substantial reduction of atmospheric pollutants; groundcover creates robust new habitat	Lawns provide little to no environmental value
Taxes	Robust tax base without need for community infrastructure	Probable budgetary shortfall; increase in community infrastructure/services needs
Electricity	Clean and renewable, with instant cost reduction for subscribers + hedge against future National Grid rate increases	Same high rates with no guarantee against future rate increases
Traffic	Effectively zero traffic once operational	At U.S. average of 10+ trips/home/day = 400+ new daily trips on local roadways
Noise	Effectively zero once operational	Traffic, radios, etc.
Philanthropy/Community Investment	Immediate investment into local community	Residential developers rarely offer philanthropic contributions to communities

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Inquiries Voiced by Neighbors and Community Members

- Visual concern
- Concern about tree clearing, wetlands, and the environment
- Health and safety
- What sounds come from the array?
- Best property use concern, property values
- Why not Quonset or other areas?
- How does the zoning allow for solar to be permitted in North Kingstown?
- Will citizens face higher taxes as a result of the project?
- Not local

NORTH KINGSTOWN
INCORPORATED 1674

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Visual Impacts

- Natural vegetative buffering already exists along most of the site.
- To the extent possible, we look for sites that would benefit from natural topographic or vegetative screening. Where not possible, we typically propose a visual buffer around those portions of the site to screen the development from neighbors.
- The visual buffer we would propose for these solar facilities is a vegetative screening in the form of existing site vegetation, supplemented by native evergreen shrubs and native evergreen trees that will grow no more than 10 feet tall.
- Quality and size of new plants will be in accordance with the current standards of American Association of Nurserymen “American Standards for Nursery Stock,” as designed by a licensed landscape architect.

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View from Shermantown Road – Photo Location 1

Before

FIGURE 2. PHOTO LOCATION #1: EXISTING CONDITIONS

After

FIGURE 3. PHOTO LOCATION #1: CONCEPTUAL PROPOSED CONDITIONS

Note: Native plants will be planted in between existing buffering

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View from Shermantown Road – Photo Location 2

Before

FIGURE 4. PHOTO LOCATION #2: EXISTING CONDITIONS

After

FIGURE 5. PHOTO LOCATION #2: CONCEPTUAL PROPOSED CONDITIONS

Note: Native plants will be planted in between existing buffering
See appendix for location of where images were taken

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Alternate Viewpoints

Photo Location #6 (Shermantown Road and Candy Apple Lane)

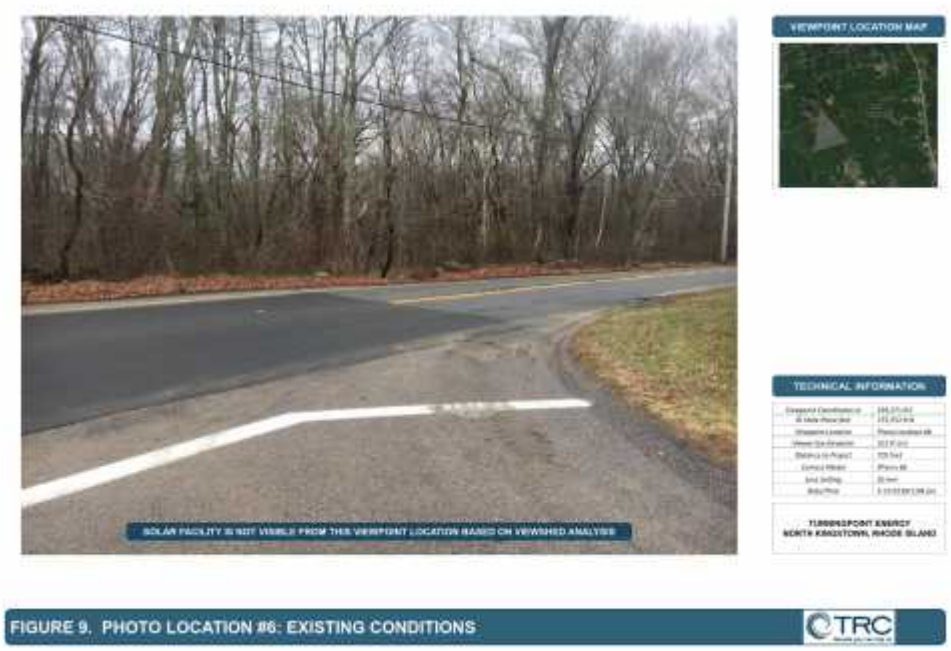

FIGURE 9. PHOTO LOCATION #6: EXISTING CONDITIONS

Photo Location #13 (Westmoreland Lane cul-de-sac)

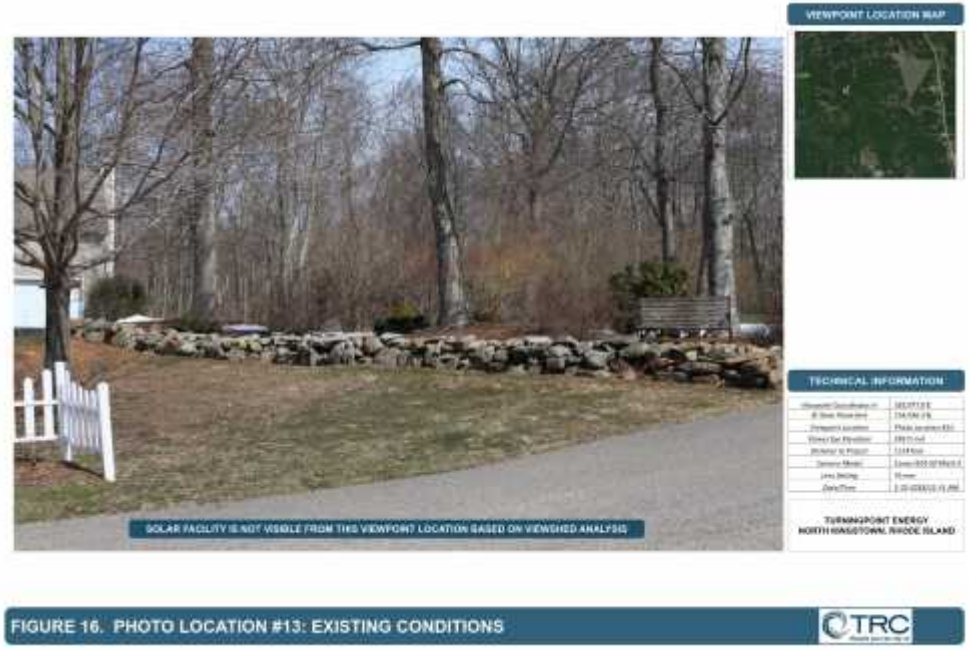

FIGURE 16. PHOTO LOCATION #13: EXISTING CONDITIONS

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Alternate Viewpoints – Westmoreland Lane

Photo Location #14 (Westmoreland Lane cul-de-sac)

FIGURE 17. PHOTO LOCATION #14: EXISTING CONDITIONS

Photo Location #15 – (Westmoreland Lane cul-de-sac)

FIGURE 19. PHOTO LOCATION #15: EXISTING CONDITIONS

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Photo Key

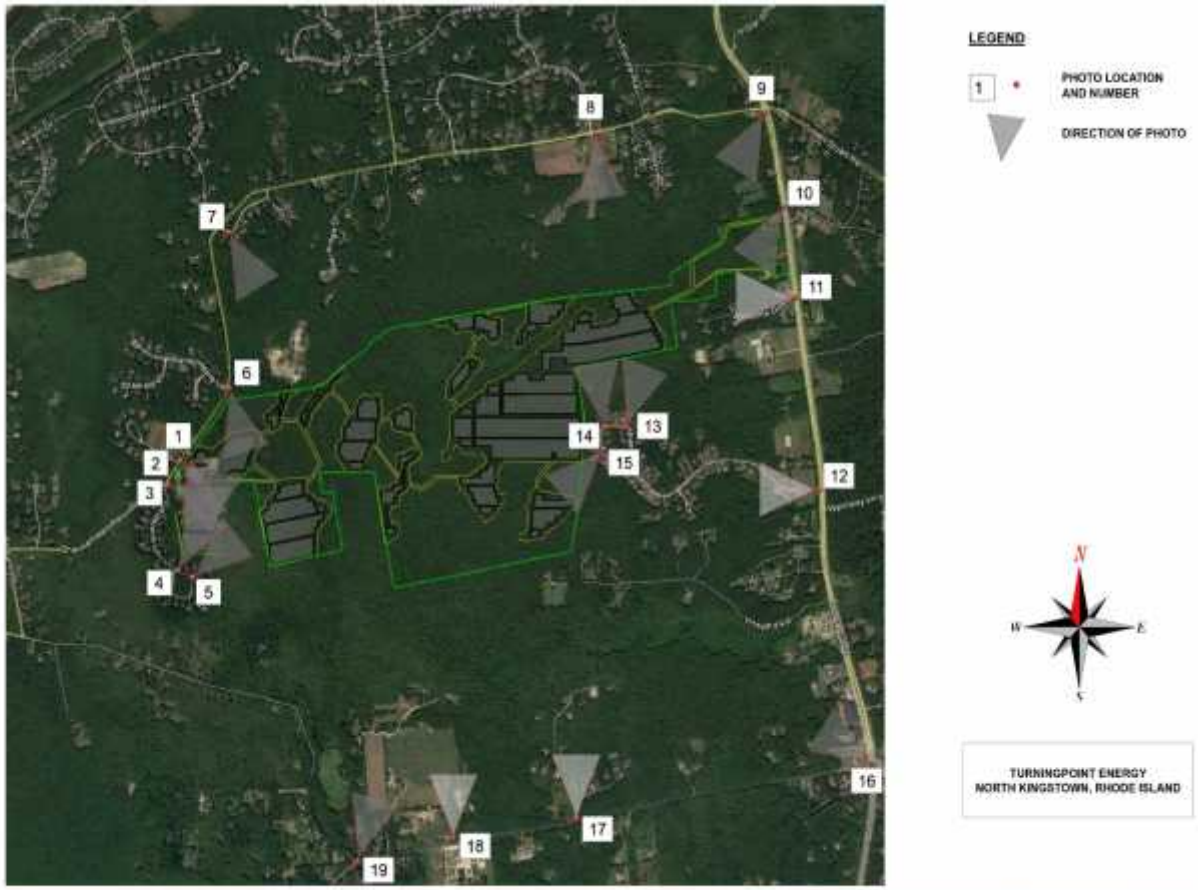

FIGURE 1. PHOTO LOCATION MAP

TRC

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Concerns about tree clearing, wetlands, and the environment

- **Trees** will be cleared only in areas where the solar array or fencing will be located, and for access roads.
  - Tree density in Rhode Island is an average of 187 trees per acre (source: USDA).
  - Project site (including access roads) estimated to cover ~135 acres.
  - Solar system has a typical 30-year useful life and will produce just under 2 million kWh (for every megawatt installed), the equivalent of 27 times the amount of trees removed (estimated).
  - Approximately 25,000 trees would be cleared for the projects as proposed; carbon offset is equivalent to ~750,000 trees planted
  - Remaining portion of trees located on over 75% of the site (estimated) will remain intact.

- **Wetlands:**
  - RIDEM has exceedingly high requirements for wetland and stream protection, which extends to the wetland and stream buffers and all plant and animal species within them.
  - Necessary wetland crossings will prioritize existing crossings. Most existing site crossings are in poor condition, in a state of disrepair, and are over a century old and currently negatively affect wetland connectivity and stream flow. These will all be improved, which will have the affect of improving these habitats.
  - New wetland crossings will be installed with no or minimal impacts to the existing wetlands and wetland buffer areas, in forms as approved by RIDEM.

- **Wildlife:** The major threat to displacement of wildlife is not solar arrays, it is urban sprawl. Additionally, climate change causes extinctions and loss of biodiversity. Rather than other development options which would permanently displace wildlife, our plan would protect this land into perpetuity for local wildlife.

- **Pollinator-friendly groundcover** – pollinator friendly mixes will be planted underneath the panels and maintained over the life of the system.

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Additional Environment, Health and Safety Considerations

❖**Radiation** – Some neighbors asked if the solar plant would create radiation for neighbors. The answer is no. Solar does not emit anything. This has been a big differentiator with coal, natural gas and nuclear plants as utilities continue to plan their future power generation assets. The electrical equipment in distributed generation solar arrays like this is equivalent to what you already have currently in your neighborhood. The project would be tapping into existing distribution infrastructure.

❖**Adding Heat** – Some neighbors asked if the solar plant would increase the temperature in their properties. The answer is no. Solar absorbs heat. Additionally, the setbacks proposed for the site would put the solar project far enough away from the neighbors so as not to impact them. The proposed additional vegetative buffer will only increase that buffer and help this perceived issue.

❖**No Emissions** - Solar is emissions-free. The electricity generated by the solar generating facility, carbon dioxide emissions will be avoided by an 2.5 million pounds per year/MW which is equivalent to planting ~1,050 trees.

❖**Safety -** We take safety very seriously. Our plans will be to have a six to eight foot fence around the solar array with locks to prohibit entrance without our express permission, and a vegetative screen in front of the fence. Additionally, the project will have a construction safety plan as well as an operations and maintenance safety plan. We will ensure that surrounding neighbors have knowledge of both the construction and operations safety plans and will coordinate directly with them to ensure safety is upheld to the highest standards.

❖Wetlands/waters study, hazardous materials study, land survey, geotechnical study, interconnection study all complete. Biological and cultural studies in process.

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What sounds will come from the solar array?

- TurningPoint Energy follows best practices to minimize sound impacts from the system during both the construction and operation phases:

1. Construction phase (6-9 months):
   - Timber and civil machinery used to clear and grade construction sites, such as bulldozers and excavators, will last for 2-3 months during site preparation.
   - Light pile machinery (specific to solar pile driving) that will produce a similar noise to that of a Standard Penetration Testing Machine, commonly used for geotechnical investigations. Duration is approximately 1 month or less.
   - Upon completion of site preparation and foundation installation there will be no specialized construction machinery for solar construction. All noise will be generated by general construction equipment such as multi passenger ATVs, tractor trailers for delivery, construction forklifts, light civil equipment and hand held power tools.

2. Operation phase (estimated at 25-30 years):
   - Neighbors will hear virtually no sound during operation
   - Sound is generated from transformers and inverters at each pad. Typical transformers have a 50dB rating at 100'. This is roughly equivalent to a dishwasher or a washing machine.
   - Sound reduces at 6dB for every 100' of added distance.

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Best Use of Property, Property Values

- Visual Considerations addressed:
  - Natural buffering already exists along boundaries of site
  - Vegetative buffering will be planted to shield view from neighbors and public roadways
- Estimated real property tax value will increase very substantially over the current use. When also adding in the new personal property tax value attributed to the solar, the town will see a very generous increase in tax revenue.
- The 13.2 MW solar projects would power the equivalent of over 3,000 homes per year and support the electricity needs of customers in the neighborhoods and community directly around the site
- Bill credit through community solar tariff will assure a long-term quiet and private neighbor in the form of a solar array, versus additional residential development
- Solar is a very passive use relative to other development options. There will be little to no associated traffic after construction.

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Additional Inquiries

- Why not locate the projects in Quonset, on an already-cleared site, on rooftops, on parking lots, on landfills/brownfields?
  - Large projects and greenfield projects are much more cost-effective, and offer lower costs to subscribers. Extremely difficult to locate large and/or previously-impacted sites in Rhode Island.
  - Quonset land values are 10 times the costs of the current site, rendering large-scale solar projects there economically infeasible; similar problem on other commercially- or industrially-zoned land throughout the state
  - Taxing authorities often frown upon solar in commercial/industrial zones due to lower tax base than manufacturing, retail or the like
  - Most difficult state – from a project siting perspective – our team has ever worked in
  - PDR programs

- How does the current zoning allow for solar to be permitted in North Kingstown?
  - After 14 months of deliberation, the North Kingstown Town Council on January 8th 2018 voted to adopt a new solar ordinance. This solar ordinance allows solar to be permitted by Special Use Permit in this zoning district, and in many other zoning districts within the town.

- Will taxes go up as a result of the solar project?
  - The solar project will pay both real estate and personal property taxes on the solar facility itself. The project creates a tax base without creating the need to build additional infrastructure. Other alternative development options for the site could not make this same claim.

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“Not a Local Developer” Concern

❖TurningPoint Energy is based in Colorado. We’re not local, but we would like to be. We are very interested in hiring local team members and doing business in Rhode Island for the long term. We are working on getting our first round of projects through full development now with plans to open a local office within the next year. If you’re interested in working with us, please let us know.

❖We will work hard to target and procure as much local construction contractor labor and material as is practical.

❖We work hard to be a good partner and community member on each project.

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Thank You

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Representative of the North Kingstown site with new habitat growth.