INVASIVE SPECIES CONTROL PLAN
FOR CONSTRUCTION ACTIVITIES AND POST CONSTRUCTION MONITORING

INTRODUCTION

Arkwright Summit Wind Farm, LLC is proposing to develop a wind energy generation facility (the Project) in the Towns of Arkwright and Pomfret in Chautauqua County, New York. The Project is anticipated to include up to 36 wind turbines, with nameplate capacities of 2.0 and 2.2 megawatts (MW), for a total anticipated nameplate capacity of 78.8 MW. An additional two turbine sites are being investigated as potential alternates, but no more than 36 turbines will ultimately be constructed. The Project will also involve construction of approximately 12.4 miles of gravel access roads, approximately 18 miles of buried 34.5 kV electrical collector lines, a 5.9 mile long overhead generator lead line, a substation/switchyard, one permanent meteorological tower, an operations and maintenance (O&M) building and a temporary laydown area.

Land use in Chautauqua County is largely characterized by agricultural and rural residential areas. The Project Site is dominated by forest and active and reverting agriculture. Farms and rural residences are interspersed along area roadways.

Approximately 4.5 acres of temporary disturbance is anticipated at each proposed wind turbine site, which will include vegetation clearing (if necessary) and soil disturbance of a 250-foot radius around each turbine site for turbine construction and rotor assembly. The permanent width of access roads will be a maximum of 34 feet, although during construction a 100 foot-wide road corridor cleared of vegetation will be required for crane movement. The collection lines will typically be installed within a trench three to four feet-deep, and will require a construction corridor with a maximum width of 75 feet. The total area of disturbance associated with the substation/switchyard, O&M building, and temporary laydown areas is expected to be approximately 21.7 acres in total. All proposed Project facilities will be located within the Towns of Arkwright and Pomfret in Chautauqua County, New York.

Wetland and stream corridors are a sensitive resource in the Project Site. Construction activities will disturb these resources as a result of access road construction, buried electrical line installation, and earthwork activities. A potential threat to wetland and stream resources is the risk of introduction or spread of invasive vegetative species, through the movement of topsoil, fill, gravel, construction equipment. Such activities will occur during both construction and restoration phases of the Arkwright Summit Wind Farm.

An invasive species is an organism that has been purposefully or accidentally introduced outside its original geographic range, and is able to proliferate and aggressively alter its new environment, potentially causing harm to

the economy, environment, or human health. Invasive plant species spread in a number of different ways. Dispersal mechanisms include wind, water, wildlife, vegetative reproduction, and human activity. Populations of invasive species typically establish most readily in places where the ground has been disturbed, thereby exposing the soil. The Arkwright Summit Wind Farm will utilize an Invasive Species Control Plan (ISCP) to minimize the spread of invasive species within federal and NYSDEC regulated wetlands, streams, and other areas affected by Project development activities on-site.

PURPOSE AND GOAL

The purpose of the ISCP is to facilitate the identification, control, and monitoring of invasive vegetation within sensitive environmental areas, such as streams and wetlands. The goal of the ISCP is to prevent expansion of invasive species. Invasive plant control will be considered successful when 0% net increase in the aerial coverage of invasive species compared to a baseline survey of the target area is realized. For the purposes of the ISCP, the target area shall consist of wetlands, streams, and adjacent upland areas.

LAWS AND REGULATIONS

There are numerous federal laws that contain provisions for the control of invasive species, such as the Endangered Species Act, the Federal Plant Pest Act, the Federal Noxious Weed Act, and the Nonindigenous Aquatic Nuisance Prevention Act. Specific to the Arkwright Summit Wind Farm, the Federal law applicable to the management of invasive species is Section 404 of the Clean Water Act.

The Environmental Conservation Law and the Agriculture & Markets Law both authorize the NYSDEC and the NYS Department of Agriculture and Markets (NYSDAM) to regulate invasive species. Under the Agriculture & Markets Law, NYSDAM has the regulatory authority regarding the Inspection and Sale of Seeds (Article 9); Integrated Pest Management Program (Article 11); and Prevention and Control of Disease in Trees and Plants (Article 14). Under the Environmental Conservation Law, the NYSDEC has regulatory authority regarding Lands and Forests (Article 9) and Fish and Wildlife (Article 11).

The official State listing of *Prohibited and Regulated Invasive Species* was updated as of September 10, 2014 (see attachment A). Part 575 of 6 NYCRR includes a list of prohibited species which are unlawful to knowingly possess with the intent to sell, import, purchase, transport or introduce; a list of regulated species which are legal to possess, sell, purchase, propagate and transport but may not be knowingly introduced into a free-living state; and require a permit for research, education and other approved activities involving prohibited species and release of regulated species into a free-living state. These regulations are expected to help control invasive species, a form of biological pollution, by reducing the introduction of new and spread of existing populations.

According to the Cornell Cooperative Extension for Chautauqua County (Cornell Cooperative Extension - Chautauqua County 2015), the following invasive species occur in Chautauqua County, and are therefore likely to occur within the Project Site:

- Exotic Bush Honeysuckles (*Lonicera spp*.)
- Common Buckthorn (*Rhammus cathartica*)
- Common Reed (*Phragmites australis*)
- Garlic Mustard (*Alliaria petiolata*)
- Giant Hogweed (*Heracleum mantegazzianum*)
- Japanese Barberry (*Berberis thunbergii*)
- Japanese Knotweed (*Polygonum cuspidatun*)
- Japanese Stiltgrass (*Microstegium vimineum*)
- Multiflora Rose (*Rosa multiflora*)
- Swallow-Worts (*Cyanchum louiseae, Cyanchum rossicum*)
- Oriental Bittersweet (*Celastrus orbiculatus*)

PROPOSED CONTROL MEASURES

A central theme of the ISCP will be educating construction workers about invasive species and how to prevent their spread. This education will be accomplished through the various contractor-training sessions provided by the Environmental Monitor, which will occur as part of the Project's Environmental Compliance and Monitoring Program. Controlling the introduction and spread of the target species will be achieved through the implementation of an Invasive Species Control Plan (ISCP), which is proposed to consist of the following measures: 1) construction materials inspection; 2) target species treatment and removal; 3) construction equipment sanitation; and 4) restoration. Each of these measures is described in detail below:

1. Construction Materials Inspection: Construction material such as seed mixes, mulch, topsoil, sand, gravel, crushed stone, and rock brought to the Project Site from an outside source will be free of invasive plant materials. In addition, during all aspects of construction, soil and/or spoil materials will only be temporarily stockpiled (i.e., will be spread and graded to match original contours at the earliest practicable time following construction activities). Proper methods for segregating stockpiled and spoil material will be implemented, and excavated soil will be reused to the maximum extent possible on the site that it was excavated from, as a means to limit opportunities for proliferation of non-native flora and other invasive species. Appropriate

sediment and erosion control measures (see Section 2.1 for additional information) will be implemented, which will also limit the spread of invasive species from one area to another.

2. Target Species Treatment and Removal: If unavoidable areas containing target invasive species are encountered within regulated wetlands/streams, then appropriate treatment and removal methods will be conducted. Therefore, hand removal of all invasive plant materials including root mass, rhizomes, and stolons would be performed within the Project's area of disturbance, followed by proper disposal. Specific disposal methods for removed plant material will be determined based on the density and quantity of invasive species encountered, and may include herbicide treatment, placement in an interim designated secure container, transport in a sealed container and proper offsite disposal in a designated secure container. Soil removal would adversely affect adjacent regulated areas by introducing disturbance and thereby promoting further spread of target invasive species. Therefore, soil removal is not considered a preferred method of control. Any herbicide spot treatments would be applied by a Certified Commercial Pesticide Applicator, Commercial Pesticide Technician, or a Private Pesticide Applicator (i.e., individuals that meet the requirements set forth in 6 NYCRR Part 325, Application of Pesticides), in accordance with NYSDEC approved herbicide and treatment measures.

3. Construction Equipment Sanitation: The introduction of non-native invasive plant species will be controlled by assuring that all construction equipment is clean upon arrival on site, and that equipment utilized in areas with an abundance of invasive species will be cleaned prior to moving to another site. The intent is that equipment should arrive at the site clean and leave the site clean. Equipment/clothing cleaning stations will be established to ensure that invasive species seeds and other viable plant parts cannot escape in runoff or through other means.

4. Restoration: Regulated wetland and stream areas that are temporarily impacted during construction will be stabilized and restored in accordance with the Project-specific Stormwater Pollution Prevention Plan. Following construction activities, temporarily disturbed areas will be seeded with a native seed mix to reestablish native vegetative cover in these areas.

POST CONSTRUCTION MONITORING

Monitoring of the control of invasive species for the Arkwright Summit Wind Farm is proposed to have two phases: 1) monitoring the implementation of the ISCP during construction and 2) monitoring the success of the ISCP for a two-year period to coincide with the monitoring of other project restoration activities (i.e., NYSDAM Guidelines). Each of these phases is described in detail below:

1. Construction Monitoring: During construction, workers will be educated about the Best Management Practices for controlling the spread of invasive species as described above, and the Environmental Monitor will confirm and maintain records that all required practices are being implemented during construction activities.

2. Post-Construction Monitoring: The change in invasive species coverage at on-site wetlands and streams from pre-construction to post-construction will be assessed by an experienced biologist conducting a visual inspection of sensitive and/or regulated areas within the limit of disturbance during the growing season for two consecutive years following restoration. A report detailing the success of the ISCP will be prepared. In the event that the ISCP goals are not met, then a revised control plan containing additional control actions and an extended monitoring term will be developed to ensure control of invasive species.

References

Cornell Cooperative Extension – Chautauqua County. 2015. Invasive and Nuisance Species. Available at: http://chautauqua.cce.cornell.edu/environment/invasive-nuisance-species. Last Accessed: September 3, 2015.

ATTACHMENT A

PROHIBITED AND REGULATED INVASIVE PLANT SPECIES

6 NYCRR Part 575
Prohibited and Regulated Invasive Species
September 10, 2014

ALGAE AND CYANOBACTERIA

Prohibited:
Caulerpa taxifolia, Killer Green Algae
Didymosphenia geminata, Didymo
Prymnesium parvum, Golden Algae

Regulated:
Cylindrospermopsis raciborskii, Cylindro
Grateloupia turuturu, Red Algae

PLANTS

Prohibited:
Acer pseudoplatanus, Sycamore Maple
Achyranthes japonica, Japanese Chaff Flower
Alliaria petiolata, Garlic Mustard
Ampelopsis brevipedunculata, Porcelain Berry
Anthriscus sylvestris, Wild Chervil
Aralia elata, Japanese Angelica Tree
Artemisia vulgaris, Mugwort
Arthraxon hispidus, Small Carpet Grass
Berberis thunbergii, Japanese Barberry
Brachypodium sylvaticum, Slender False Brome
Cabomba caroliniana, Fanwort
Cardamine impatiens, Narrowleaf Bittercress
Celastrus orbiculatus, Oriental Bittersweet
Centaurea stoebe (C. biebersteinii, C. diffusa, C. maculosa misapplied, C. xpsammogena), Spotted Knapweed
Cirsium arvense (C. setosum, C. incanum, Serratula arvensis), Canada Thistle
Cynanchum louiseae (C. nigrum, Vincetoxicum nigrum), Black Swallow-wort
Cynanchum rossicum (C. medium, Vincetoxicum medium, V. rossicum), Pale Swallow-wort
Dioscorea polystachya (D. batatas), Chinese Yam
Dipsacus laciniatus, Cut-leaf Teasel
Egeria densa, Brazilian Waterweed
Elaeagnus umbellata, Autumn Olive
Euphorbia cyparissias, Cypress Spurge
Euphorbia esula, Leafy Spurge
Ficaria verna (Ranunculus ficaria), Lesser Celandine
Frangula alnus (Rhamnus frangula), Smooth Buckthorn
Glyceria maxima, Reed Manna Grass
Heracleum mantegazzianum, Giant Hogweed
Humulus japonicus, Japanese Hops
Hydrilla verticillata, Hydrilla/ Water Thyme
Hydrocharis morsus-ranae, European Frogbit
Imperata cylindrica (I. arundinacea, Lagurus cylindricus), Cogon Grass
Iris pseudacorus, Yellow Iris
Lepidium latifolium, Broad-leaved Pepper-grass
Lespedeza cuneata, Chinese Lespedeza
Ligustrum obtusifolium, Border Privet
Lonicera japonica, Japanese Honeysuckle
Lonicera maackii, Amur Honeysuckle
Lonicera morrowii, Morrow's Honeysuckle
Lonicera tatarica, Tartarian Honeysuckle
Lonicera x bella, Fly Honeysuckle
Ludwigia hexapetala (L. grandiflora), Uruguayan Primrose Willow
Ludwigia peploides, Floating Primrose Willow
Lysimachia vulgaris, Garden Loosestrife
Lythrum salicaria, Purple Loosestrife
Microstegium vimineum, Japanese Stilt Grass
Murdannia keisak, Marsh Dewflower
Myriophyllum aquaticum, Parrot-feather
Myriophyllum heterophyllum, Broadleaf Water-milfoil
Myriophyllum heterophyllum x M. laxum, Broadleaf Water-milfoil Hybrid
Myriophyllum spicatum, Eurasian Water-milfoil
Nymphoides peltata, Yellow Floating Heart
Oplismenus hirtellus, Wavyleaf Basketgrass
Persicaria perfoliata (Polygonum perfoliatum), Mile-a-minute Weed
Phellodendron amurense, Amur Cork Tree
Phragmites australis, Common Reed Grass
Phyllostachys aurea, Golden Bamboo
Phyllostachys aureosulcata, Yellow Groove Bamboo
Potamogeton crispus, Curly Pondweed
Pueraria montana, Kudzu
Reynoutria japonica (Fallopia japonica, Polygonum cuspidatum), Japanese Knotweed
Reynoutria sachalinensis (Fallopia sachalinensis, Polygonum sachalinensis), Giant Knotweed
Reynoutria x bohemica (Fallopia x bohemica, Polygonum x bohemica), Bohemian Knotweed
Rhamnus cathartica, Common Buckthorn
Rosa multiflora, Multiflora Rose
Rubus phoenicolasius, Wineberry
Salix atrocinerea, Gray Florist's Willow
Silphium perfoliatum, Cup-plant
Trapa natans, Water Chestnut
Vitex rotundifolia, Beach Vitex

Regulated:
Acer platanoides, Norway Maple
Clematis terniflora, Japanese Virgin's Bower
Euonymus alatus, Burning Bush
Euonymus fortunei, Winter Creeper
Miscanthus sinensis, Chinese Silver Grass
Robinia pseudoacacia, Black Locust

FISH

Prohibited:
Channa argus, Northern Snakehead

Channa marulius, Bullseye Snakehead
Channa micropeltes, Giant Snakehead
Clarias batrachus, Walking Catfish
Gambusia affinis, Western Mosquitofish
Gambusia holbrooki, Eastern Mosquitofish
Hypophthalmichthys harmandi, Largescale Silver Carp
Hypophthalmichthys molitrix, Silver Carp
Hypophthalmichthys nobilis, Bighead Carp
Misgurnus anguillicaudatus, Oriental Weatherfish
Mylopharyngodon piceus, Black Carp
Neogobius melanostomus, Round Goby
Petromyzon marinus, Sea Lamprey
Proterorhinus semilunaris (P. marmoratus), Tubenose Goby
Tinca tinca, Tench

Regulated:
Carassius auratus, Goldfish
Cyprinella lutrensis, Red Shiner
Cyprinus carpio, Common Carp/ Koi
Gymnocephalus cernuus, Ruffe
Monopterus albus, Asian Swamp Eel
Oreochromis aureus, Blue Tilapia
Oreochromis niloticus, Nile Tilapia
Pterois miles, Common Lionfish
Pterois volitans, Red Lionfish
Sander lucioperca (Stizostedion lucioperca), Zander
Scardinius erythrophthalmus, Rudd

AQUATIC INVERTEBRATES

Prohibited:
Bellamya chinensis (Cipangopaludina chinensis),Chinese Mystery Snail
Bellamya japonica, Japanese Mystery Snail
Bithynia tentaculata, Faucet Snail
Bythotrephese longimanus (B. cederstroemi), Spiny Water Flea
Cercopagis pengoi, Fishhook Water Flea
Corbicula fluminea, Asian Clam
Crassostrea ariakensis, Suminoe Oyster
Didemnum spp., Carpet Tunicate
Dreissena polymorpha, Zebra Mussel
Dreissena rostriformis bugensis, Quagga Mussel
Eriocheir sinensi, Chinese Mitten Crab
Hemigrapsus sanguineus, Asian Shore Crab
Hemimysis anomala, Bloody Red Shrimp
Orconectes rusticus, Rusty Crayfish
Potamopyrgus antipodarum, New Zealand Mud Snail
Rapana venosa, Veined Rapa Whelk
Styela plicata, Asian Sea Squirt

Regulated:
Carcinus maenas, European Green Crab
Daphnia lumholtzi, Water Flea
Hemigrapsus takanoi (H. penicillatus), Brush-clawed Shore Crab/ Grapsid Crab

TERRESTRIAL INVERTEBRATES

Prohibited:
Achatina achatina, Giant Ghana Snail
Achatina fulica (Lissachatina fulica), Giant African Land Snail
Adelges tsugae, Hemlock Woolly Adelgid
Agrilus planipennis, Emerald Ash Borer
Amynthas spp., Asian Earthworms
Anoplophora glabripennis, Asian Longhorn Beetle
Apis mellifera scutellata x A. mellifera ligustica/ A. mellifera iberiensis, Africanized Honey Bee
Archachatina marginata, Giant West African Snail
Cryptococcus fagisuga, Beech Scale
Lymantria dispar, Asian and European Gypsy Moth
Monochamus alternatus, Japanese Pine Sawyer
Pityophthorus juglandis, Walnut Twig Beetle
Sirex noctilio, Sirex Woodwasp

TERRESTRIAL AND AQUATIC VERTEBRATES

Prohibited:
Cygnus olor, Mute Swan
Lepus europaeus, European Hare
Myocastor coypus, Nutria
Nyctereutes procyonoides, Asian Raccoon Dog
Sus scrofa (excluding Sus scrofa domestica), Eurasian Boar

Regulated:
Alopochen aegyptiacus, Egyptian Goose
Cairina moschata, Muscovy Duck
Myiopsitta monachus, Monk Parakeet
Oryctolagus cuniculus, European Rabbit
Trachemys scripta elegans, Red-eared Slider
Xenopus laevis, African Clawed Frog

FUNGI

Prohibited:
Amylostereum areolatum, Sirex Wasp Fungus
Geomyces destructans, White-nose Syndrome
Geosmithia morbida, Thousand Canker Disease
Phytophthora ramorum, Sudden Oak Death

For the official regulations and species lists please see: http://www.dec.ny.gov/regulations/265.html.

New York State Department of Environmental Conservation
Part 575 Invasive Species Regulations
Questions and Answers

What are invasive species?
Invasive species means a species that is non-native to the ecosystem under consideration; and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Why are invasive species a problem?
Invasive species have a detrimental effect upon the State's natural communities and systems by out-competing native species, diminishing biological diversity, altering community structure and, in some cases, changing ecosystem processes. They can even harm human health.

How will these regulations help?
The regulations were developed by the Department of Environmental Conservation, in cooperation with the Department of Agriculture and Markets. These regulations, once implemented, are expected to help control invasive species by reducing the introduction and spread of invasive species populations by limiting commerce in such species, thereby having a positive impact on the environment.

How were the lists of species in the regulations developed?
The lists of prohibited and regulated species were developed using the standardized species assessment and listing process outlined in the 2010 report "A Regulatory System for Non-native Species". Lists of candidate non-native invasive species were compiled by reviewing other state regulations, reports, lists and consulting with agency experts. A rapid assessment was conducted to determine if the species warranted listing and was already federally regulated. Ecological invasiveness assessments were conducted on each potential invasive species followed by a socio-economic assessment for those ranking High or Very High. The assessment team then placed the species in the appropriate regulatory classification of Prohibited or Regulated. The initial recommendations were submitted to the Invasive Species Advisory Committee (25 Non-Government Organizations) and Council (9 State Agencies) for review and comment. The lists were then incorporated into the regulations.

Why isn't a particular species included on the prohibited or regulated lists?
Due to staffing limitations and time constraints, the initial list of prohibited and regulated species is not all-encompassing. We anticipate that the regulations will be updated on a regular basis. The regulations include language for petitioning for addition or removal of species from the prohibited and regulated lists. Some species were assessed, but do not meet the criteria for prohibition or regulation.

Aren't some of the species listed as either prohibited or regulated already established?
Yes, however, there are areas of the State in which they have not yet established populations and these regulations are intended to slow the spread by reducing the number of individuals of a species released into a region, to which they are not native, associated with the sale and introduction of such species.

When did the regulation become final?
The part 575 invasive species regulations were proposed, and a 60 day to public comment held between October and December 2013. During this time, four public hearings were scheduled across the State. All comments received were reviewed and a summary of public comments and agency responses was compiled. Required changes were made to the final regulations. A summary of the final regulations was published in the State Register September 10, 2014 and the full express terms were published on the Department's website.

Once finalized, when will the regulations become implemented?
A summary of the final regulations was published in the State Register September 10, 2014. The part 575 regulations take effect 6 months later (March 10, 2015).

What is the difference between prohibited and regulated invasive species?
Prohibited invasive species cannot be knowingly possessed with the intent to sell, import, purchase, transport or introduce. In addition, no person shall sell, import, purchase, transport, introduce or propagate prohibited invasive species. Regulated invasive species, on the other hand, are species which cannot be knowingly introduced into a free-living state, or introduced by a means that one should have known would lead to such an introduction, although such species shall be legal to possess, sell, buy, propagate and transport.

What is considered a free-living state?
A species is considered in a free-living state if it is introduced to public lands or lands connected to public lands, natural areas, and public waters or waters connected to public waters.

Are there any exceptions to the definition of a free-living state?
Yes, such exceptions include artificial ponds and water gardens with no outlet to public waters, waters entirely within private land not connected to public waters, and water-use facilities with outflows not providing access to public waters.

Do the regulations require existing populations of species on the prohibited and regulated lists be managed or destroyed by the land-owner?
No, existing populations of non-native invasive species listed as prohibited or regulated and established prior to the implementation of the final part 575 regulations do not require management by the owner. However, once implemented, the final regulations do prohibit commerce involving those species listed as prohibited species and the release of regulated species into a free-living state.

What species have grace periods established in the regulations?
A one year grace period is included in the regulations for Japanese Barberry (*Berberis thunbergii*), during which existing stock of this species may be sold. In addition, a person may possess, sell, offer for sale, distribute, transport, or otherwise market or trade live Eurasian boars (*Sus scrofa*) until September 1, 2015. No person shall knowingly import, propagate or introduce Eurasian boars into a free-living state.

Will there be a fee for permits? No fee is anticipated for permits issued for research, education or other approved activity.

Who will enforce the final regulations?
The regulations will be enforced by the Department of Environmental Conservation, with assistance from the Department of Agriculture and Markets.