

**Summary Review of the Amended
Kibby Expansion Wind Project
Aesthetic Impact Assessment**

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1. Introduction

On August 16, 2010, TransCanada Maine Wind Development, Inc. submitted an amendment to their permit application to expand its existing Kibby Wind Power Project in Kibby Twp. and Skinner Twp. in Franklin County. The project expansion would be located in Kibby Twp. and Chain of Ponds Twp., and the amended plan consists of 11 Vestas V90 turbines, access roads, a 34.5 kV collector line, and a substation. The amendment includes a revised project overview map, visibility maps, and a simulation from Long Pond. The report entitled *Kibby Expansion Wind Project Aesthetic Impact Assessment* by Jean Vissering (2009) with simulations and mapping by Judy Bartos was submitted as part of the original 15-turbine application. James F. Palmer submitted the *Review of the Kibby Expansion Wind Project Aesthetic Impact Assessment* on April 16, 2010.

This review concerns the adequacy of the amendment with reference to the aesthetic impact assessment report prepared for the original 15-turbine proposal (otherwise known as a Visual Impact Assessment, or VIA).¹ It is assumed that the reader is familiar with both the earlier VIA and its review.

2. Evaluation of Scenic Impacts

Palmer's (2010) earlier review addressed the adequacy of the VIA in detail. The in depth comments about the process of conducting and reporting the VIA are not repeated here.

This review focuses more narrowly on summarizing the amended plan's visual impacts to the state and nationally significant scenic resources. This review is based on:

- Field work conducted as part of the earlier review (Palmer 2010).
- A visibility analysis identifying areas with potential to see the upright blade tip and the turbine hub without and with the screening effect of forest vegetation. Visibility analyses are conducted for the amended 11 turbine plan and for the cumulative effect of adding 11 turbines to the existing 44 turbines.
- Perspective visualizations from selected viewpoints.

Table 1 shows the maximum number of Kibby Expansion turbines visible from the significant scenic resources with the 15 and 11 turbine configurations based on the visibility analysis to the upright blade tip (125 meters or 410 feet) and turbine hub (80 meters or 262.5 feet).² The percent of the area within 8 miles of a project turbine with visibility of a turbine is also shown. The elimination of four turbines and relocation of one turbine does result in a reduction of the number of visible turbines in most instances.

¹ For the purposes of this review, aesthetic, scenic and visual impacts will be considered synonymous.

² The review of the 15-turbine proposal (Palmer 2010) evaluated the visibility of the turbine hub at 90 meters, as reported by Vissering (2009, page 5). The hub height will be 80 meters, and this height was used in the visibility analysis of this review.

Table 1: Maximum Number of Kibby Expansion Turbines Visible with the 15 and 11 Turbine Configurations

Significant Scenic Resource	Blade Tip Visible				Turbine Hub Visible			
	Bare Topography		Forest Cover		Bare Topography		Forest Cover	
	15-turbine	11-turbine	15-turbine	11-turbine	15-turbine	11-turbine	15-turbine	11-turbine
Arnold Pond	10	10	10	10	7	6	6	6
Crosby Pond	11	11	11	11	10	9	9	9
Chain of Ponds: Round Pond	0	0	0	0	0	0	0	0
Chain of Ponds: Natanis Pond	7	3	7	3	7	3	5	1
Chain of Ponds: Long Pond	14	10	14	10	14	10	14	10
Chain of Ponds: Bag Pond	14	10	13	10	12	10	12	10
Chain of Ponds: Lower Pond	0	0	0	0	0	0	0	0
Kibby Stream [†]	15	11	15	11	15	11	14	11
Spencer Stream	0	0	0	0	0	0	0	0
North Branch Dead River	7	3	6	1	6	1	5	0
Arnold Trail	14	10	14	10	14	10	14	10
Natanis Pond Overlook	0	0	0	0	0	0	0	0
Sarampus Falls Rest Area	0	0	0	0	0	0	0	0
Percent of APE with Potential Visibility	44.5	39.2	8.5	7.1	42.0	34.3	7.9	6.2

Notes: [†]Site with undetermined public legal right of access.

Several significant scenic resources have no potential visibility and are not considered further in this review. These include Round Pond, Lower Pond, Spencer Stream, the Natanis Pond Overlook and the Sarampus Falls Rest Area.

The Wind Energy Act requires that “the public [must have] a legal right of access” if the significant scenic resources is not on public land.³ The North Branch Dead River can be accessed from the boat launch at the Sarampus Falls Rest Area. Access to Kibby Stream within the 8-mile study area appears to from private roads and land without a public right of access. However, there is the possibility of access from Hurricane Pond (20 acres) or Douglas Pond (20 acres).

The remaining sites will be evaluated based upon my understanding of the Wind Energy Act’s scenic impact Evaluation Criteria.⁴

- A **Significance of resource:** Consider the role of scenic quality in designation, and the level of significance relative to similar designations. Indicators may be obtained from the designation reports or forms, supplemented by descriptions from widely used guide books.
- B **Character of surrounding area:** Consider contrasts with the existing landscape and the presence of other contrasting elements. This is based on a descriptive landscape characterization, typically prepared by a landscape professional.
- C **Typical viewer expectation:** Consider the resource’s scenic reputation, and the centrality of scenic quality in it’s designation. User surveys may provide an indicator of expectations. In the absence of direct empirical data, distance traveled or descriptions from widely used guide books may provide alternative indicators.
- D **Development’s purpose and context:** This criterion incorporates the Wind Energy Act’s goal of achieving significant wind energy development into consideration of scenic impacts. Consider site quality—wind suitability, proximity to transmission line, and potential power generation if all potential turbine sites in the area are used. Low evaluation means that if all sites in the area are developed, it makes a major contribution to Wind Energy Act’s goals. High evaluation means the area makes a minor contribution when all potential sites are developed.
- E.1 **Extent, nature & duration of uses:** Consider the number of users, role of scenic quality in use of the resource, and typical length of stay. User surveys provide the most direct indicators, but trail logs or traffic counters may also be useful. Potential accessibility may be an indicator in the absence of empirical data.
- E.2 **Effect on continued use and enjoyment:** If the project were built, what is the likelihood of users returning, and the impact on their enjoyment of the scenic resource? User surveys incorporation accurate photographic visual simulations may provide indicators.

³ 35-A MRSA, § 3451, sub-§9

⁴ 35-A MRSA, § 3452, sub-§3

- F Scope and scale of project views:** Consider the relative magnitude of project elements, and the proportion of total angle of view occupied by project. Accurate photographic simulations and visibility analyses may provide indicators.

The levels of severity for the Evaluation Criteria are as follows:

- 0 **None:** The Evaluation Criterion makes no contribution to scenic impact. For some criteria a rating of None means that there is No Adverse Impact (e.g., there are no people present—Criterion E, or the project is not visible—Criterion F).
- 1 **Low:** The severity of the contribution is low. While the scenic impact may be Adverse, it appears to be within the acceptable range for any type of development (e.g., only one or two turbines will be partially visible at a distance of nearly 8 miles—Criterion F).
- 2 **Medium:** The severity of the contribution is medium, which is Adverse but typical of wind energy development, and within the range of impacts that the Wind Energy Act anticipates (e.g., other towers or large scale structures are present that contrast highly with the surrounding landscape).
- 3 **High:** The severity of the contribution is high from this criterion, which in association with other criteria may make the overall scenic impact Unreasonably Adverse (e.g., a possible scenario suggesting an Unreasonable Adverse impact might be that the scenic resource is a national icon—Criterion A is High, though there are only modest numbers of viewers—Criteria E.1 is Low—to a person their enjoyment will seriously decline—Criteria E.2 is High).

Table 2 summarizes the Evaluation Criteria ratings for the Amended Kibby Expansion Wind Project, based on my interpretation of the information available in the Kibby Expansion VIA (Vissering 2009), the amended application, my original review Palmer 2010), and this review.

Criterion A: Significance of resource. Arnold Pond, Crosby Pond and Chain of Ponds are all scenic resource of state significance with a reported scenic value rating of “Outstanding” and are given a Medium rating. The Arnold Trail is a nationally significant resource, but scenic value is not mentioned on its designation forms; it’s rating is Low. All other resources seem to have simply met the minimum threshold for significance and their ratings are also Low.

Criterion B: Character of surrounding area. The surrounding area is generally of natural rural character. However, it is not “pristine,” as evidenced by the obvious presence of Route 27, logging activity, and rural development. The state has conserved land surrounding Round Pond at the northern end of Chain of Ponds, on eastern side of Natanis Pond, and the western side of Long Pond and Bag Pond. These lands are undeveloped except for the Natanis Point Campground. The rating for all listed resources is Medium.

Criterion C: Typical viewer expectation. There is little empirical research about the sensitivity to scenic quality and impacts by people engaged in different recreation activities. However, one study did find that people who fish or hunt are less sensitive to scenic value and impacts than people who hike and canoe (Palmer 1999). For this summary, the Great Ponds and two streams are given a Medium rating. The Arnold Trail is nationally significant, but scenic quality did not play a role in its designation; it is given a Medium rating.

Criterion D: Development's purpose and context. The Amended Kibby Expansion Wind Project is an expansion of a larger existing wind power development. The overall Kibby development will make a major contribution toward achieving the Wind Energy Act's goal, and therefore receives a Low rating. Said another way, this project could be thought of as contributing to wind energy visual "smart growth."

Criterion E.1: Extent, nature & duration of uses. No documented information about users is presented, therefore this criterion's ratings are little more than guesstimates. There are boat launches on Arnold Pond, Natanis Pond, and Long Pond. Crosby Pond has maintained forest campsites and Natanis Pond has a developed campground that includes 120 camp sites, half with RV hookups, a bath house, small dock, sand beach, and general store. However, this development is all on the eastern side of Natanis Ponds, which does not have a potential view of the turbines. Due to this level of development and the ease of access, it seems reasonable to anticipate moderate levels of day or multiple-day users engaged in hiking, camping, fishing, paddling and modest sized motor boating. It is guesstimated that peak daily use of Chain of Ponds is at most a couple hundred, with average daily use being much lower. This puts these ponds at the lower end of a Medium rating.

There is a boat launch for the North Branch Dead River at the Sarampus Falls Rest Area, and anglers may have access from other locations along Route 27. Stretches within the study area are fished for trout or to paddle a canoe or kayak. Legal public access to Kibby Stream is undetermined, but one could walk to either Douglas or Hurricane Ponds (which are Great Ponds) and continue up Kibby Stream. Kibby Stream is restricted to fly fishing. It is anticipated that both of these resources receive relatively low day-use activity and are given a Low rating.

There is no indication that the Arnold Trail has more than a very low level of use; it is given a Low rating.

Criterion E.2: Effect on continued use and enjoyment. No documented information about users or their sensitivity to viewing wind turbines from a distance of 3 or more miles is presented, therefore this criterion's ratings are little more than guesstimates. Most users in the area will be on the northeast shore of the Chain of Ponds, and not have a view of the turbines. As part of their experience, they are already accommodating both visual and auditory amenity impacts from Route 27. Users may see the hubs of Kibby Expansion turbines from over 3 miles away on approximately half of Long Pond, and a quarter of Bag Pond. However, the hubs of some existing Kibby turbines may also be seen from areas along Chain of Ponds. It is probable that users on the ponds who dislike the turbines may restrict their activity to areas without views. A Medium rating is given to Long Pond and Bag Pond; a Low rating to the remaining ponds.

Paddlers on the North Branch Dead River are most likely headed down stream, so they will be facing away from the turbines. Potential views by people fishing are of one to three turbine tips from a distance of 5 or more miles. Both situations suggest a Low rating.

Walking about 1.3 miles from Hurricane Pond to Kibby Stream, there is the possibility of a view of as many as 5 to 8 turbine hubs from 5 miles away. However, it is likely that shore vegetation would screen these views. If one were to continue up Kibby Stream for another 2.2 miles, one comes to a 0.3 mile stretch with potential visibility of up to 6 turbine hubs looking up the stream, making it more likely that shore vegetation would not block the view. Continuing another 1.3 miles (5 miles from Hurricane Pond) one enters a 2.5 mile stretch with potential views of turbine hubs; in some places all 11 of them. However, the stream is at its narrowest here, the shore is wooded and the stream is not oriented toward the turbines. As a result, views are likely to be screened if someone walked the 5 to 7 miles in the stream from a point with a legal right of access to fly fish here. While there may be brief opportunities to see a major portion of many turbines, it is likely that someone fly fishing would not be significantly affected by this situation if the fishing were good (which one would hope if they walked 5 to 7 miles in a stream to get there). The rating is Low.

Since there is no indication that scenic quality plays a significant role in the historic experience of the Arnold Trail, it is given a Low rating.

Criterion F: Scope and scale of project views. The number of turbines seen from Long Pond and Bag Pond is sufficient to be seen as a group—a power plant—and not isolated objects in the landscape. However, they will be seen from three miles away and do not overwhelm the view. The rating is Medium. If one were to walk the length of Kibby Stream there is the potential, at least briefly, to see major portions of many turbines from less than a mile away. While the potential may be slight, when seen at this distance the turbines would seem dominant (which may attract some viewers); the rating is High. Other significant resources are further away and/or have views of fewer turbines; they have a Low rating.

Table 2: Summary of Evaluation Criteria Ratings for the Amended Kibby Expansion Wind Project

Scenic Resources of State or National Significance in the Surrounding Area	Scenic Impact Evaluation Criteria							Overall Scenic Impact
	A	B	C	D	E.1	E.2	F	
Great Ponds								
Arnold Pond	2	2	2	1	2	1	1	Low-Med
Crosby Pond	2	2	2	1	2	1	1	Low-Med
Chain of Ponds: Round Pond	*	*	*	*	*	*	0	None
Chain of Ponds: Natanis Pond	2	2	2	1	2	1	1	Low-Med
Chain of Ponds: Long Pond	2	2	2	1	2	2	2	Medium
Chain of Ponds: Bag Pond	2	2	2	1	2	2	2	Medium
Chain of Ponds: Lower Pond	*	*	*	*	*	*	0	None
Streams								
Kibby Stream †	1	2	2	1	1	1	3	Low-Med
Spencer Stream	*	*	*	*	*	*	0	None
North Branch Dead River	1	2	2	1	1	1	1	Low
National Historic Places								
Arnold Trail	1	2	2	1	1	1	1	Low
Scenic Road Rest Stops								
Natanis Pond Overlook	*	*	*	*	*	*	0	None
Sarampus Falls Rest Area	*	*	*	*	*	*	0	None

Notes: * Since there is no project visibility, there is no scenic impact.

† Site with undetermined public legal right of access.

3. Conclusions

This review is an update to Palmer's (2010) earlier review of a 15-turbine expansion. Most sections of that report are still applicable, and have been relied upon for completion of this review.

An attempt is made to systematically apply the scenic impact criteria and standards in Maine's Wind Energy Act to evaluate the Amended Kibby Expansion Wind Project. However, it is hampered by a lack of data documenting the use of the significant scenic resources, the users' expectations and the role of scenery in their experiences of these places, and how the potential scenic impact may affect their future use and enjoyment. Nonetheless, it is possible to move forward with guesstimates for these criteria, though reasonable people may disagree about the ratings used. In addition, I have needed to make some interpretations of the law without benefit of a full legal clarification (e.g., that legal public access to a scenic stream on private land could include following the stream from a Great Pond which is also surrounded by private land).

The results of this evaluation are that two ponds, Long Pond and Bag Pond have the potential for Medium scenic impacts. Such impacts are Adverse but typical of wind energy development, and within the range of impacts that the Wind Energy Acts anticipates. Several locations have the potential for Low to Medium scenic impacts, primarily because of distance or reduced visibility. These include Arnold Pond, Crosby Pond, Natanis Pond and North Branch Dead River. The Kibby Stream is an unusual case. Someone fly fishing might get to within a mile of the turbines after walking up stream for 7 miles. They would have the potential to see large portions of several turbines at a close distance, though perhaps only briefly through a screen of trees. However, it is not clear that such exposure would disrupt a fly-fishing experience (which has more to do with the fishing after all). It is just as likely that someone might pick this fishing destination in the hopes that they might glimpse the turbines. The rating of scenic impact is Low-Medium. The potential scenic impacts to Arnold Trail are Low, largely because the experience of scenic quality is not identified as a significant determinant in its nomination forms. There is no scenic impact to Round Pond, Lower Pond, the Natanis Pond Overlook or the Sarampus Falls Rest Area because turbines are not visible from these areas.

6. References

- Maine, Department of Inland Fisheries and Wildlife. 2010 Open Water Fishing Laws and Rules. http://www.maine.gov/ifw/laws_rules/fishing/openwater/franklin.htm (Accessed September 27, 2010).
- ESRI. 2006. *ArcGIS Desktop*. Redlands, CA: ESRI.
- Expedited Permitting of Grid-Scale Wind Energy Development*. MRSA Title 35-A, Chapter 34-A. <http://www.mainelegislature.org/legis/statutes/35-A/title35-Ach34-A.pdf> (accessed February 23, 2010).
- Palmer, James F. 2010. Review of the Kibby Expansion Wind Power Aesthetic Impact Assessment. Burlington, VT: Scenic Quality Consultants.
- Palmer, J.F. 1999. Recreation participation and scenic value assessments. In *Proceedings of the 1998 Northeastern Recreation Research Symposium*, edited by H.G. Vogelsong. Gen. Tech. Rep. NE-255. Radnor, PA: USDA, Forest Service, Northeastern Forest Research Station. pp. 199-203.
- Vissering, Jean. 2009. Kibby Expansion Wind Project Aesthetic Impact Assessment. TransCanada.

Appendix 1

Viewshed Maps for Amended Kibby Expansion

Map 1: Topographic Viewshed for Blade Tip

Map 2: Forested Viewshed for Blade Tip

Map 3: Topographic Viewshed for Turbine Hub

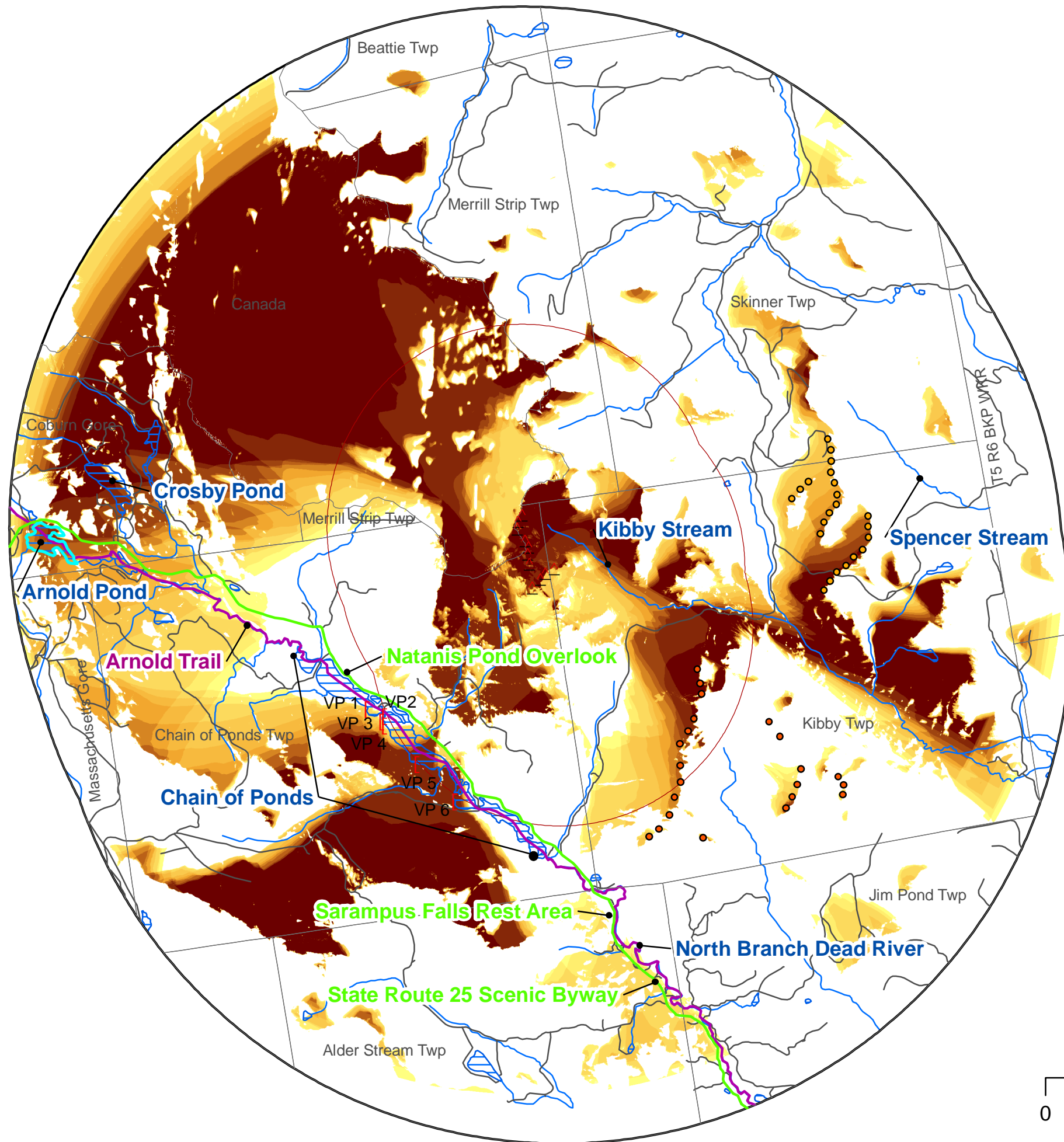
Map 4: Forested Viewshed for Turbine Hub

Visibility analysis determines whether a line of sight exists between two specified points. A geographic information system (GIS) is used to map the viewsheds from which the Kibby turbines are potentially visible. In principle this is an objective exercise in geometry highly suited to a computer application. In practice however, since the data are only approximations of the actual condition and may include errors, the resulting viewshed maps are best considered a preliminary analysis of potential visibility under specified conditions. The maps are useful for providing a preliminary investigation of the overall potential visual impact. If potential visual impacts appear to exist for significant scenic resources, they need to be confirmed through field investigation and other visualization techniques.

Map 1

Amended Kibby Expansion Wind Power Project

Topographic Viewshed for Blade Tip



Legend

△ Amended Kibby Expansion

○ Kibby A

● Kibby B

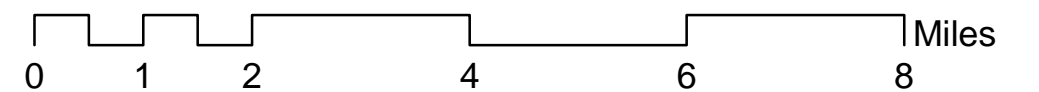
— Rt. 27 Scenic Byway

— Arnold Trail

Visible Turbines

High : 11

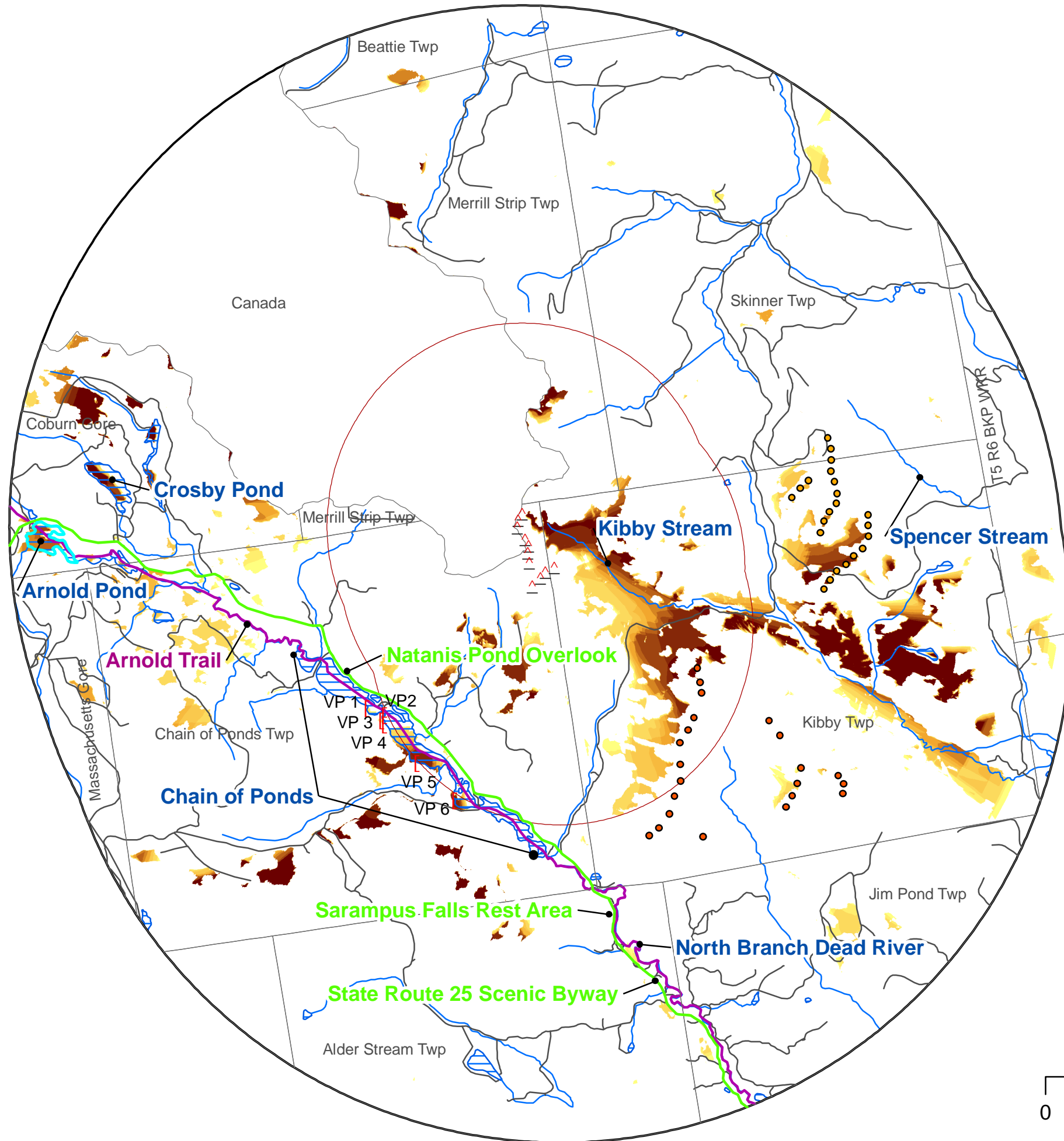
Low : 1



Map 2

Amended Kibby Expansion Wind Power Project

Forested Viewshed for Blade Tip

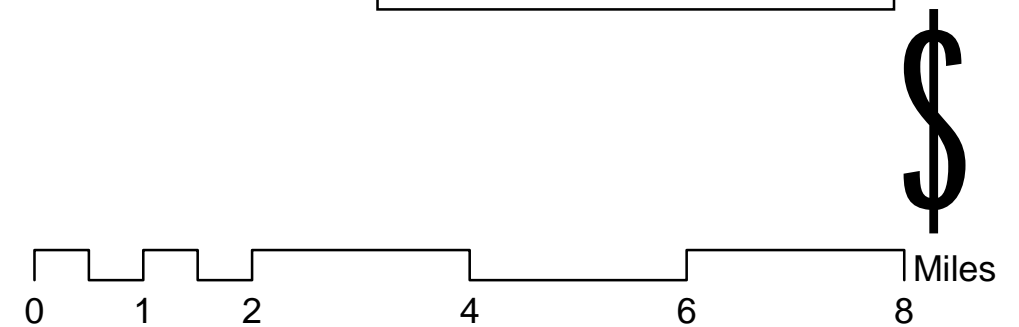


Legend

- △ Amended Kibby Expansion
- Kibby A
- Kibby B
- Rt. 27 Scenic Byway
- Arnold Trail

Visible Turbines

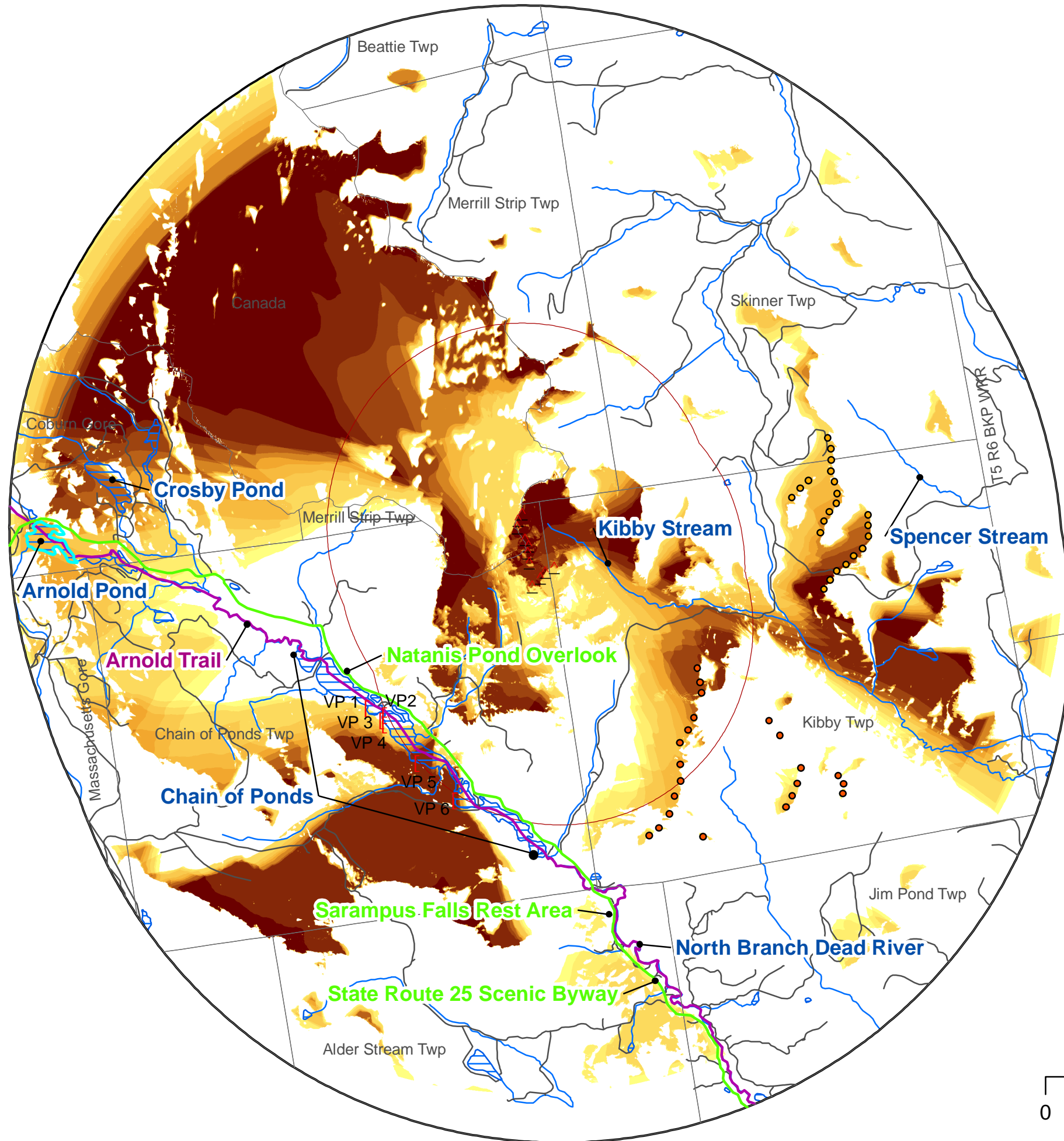
High : 11
Low : 1



Map 3

Amended Kibby Expansion Wind Power Project

Topographic Viewshed for Turbine Hub



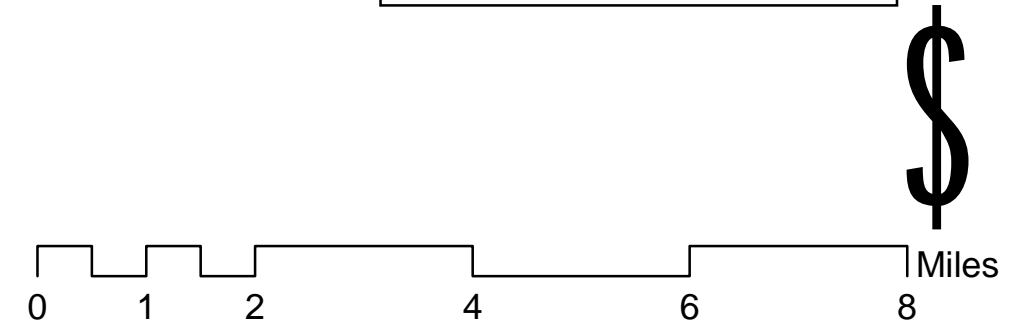
Legend

- △ Amended Kibby Expansion
- Kibby A
- Kibby B
- Rt. 27 Scenic Byway
- Arnold Trail

Visible Turbines

High : 11

Low : 1



Map 4

Amended Kibby Expansion Wind Power Project

Forested Viewshed for Turbine Hub

