INTEGRATED VEGETATION MANAGEMENT STRATEGIES
FOR INDIANA BAT HABITAT
IN VERMONT ELECTRIC TRANSMISSION LINE RIGHTS OF WAY

The Indiana bat is a state- and federally-listed endangered species in Vermont. The available of suitable habitat in areas used by bats is of primary importance to the management strategies of the Vermont Fish and Wildlife Department (VFWD) and the U.S. Fish and Wildlife Service (USFWS). Vegetation management activities associated with the maintenance of electric transmission lines present both challenges and opportunities for the study and effective management of bat habitat. Central Vermont Public Service Corporation (CVPS) and the Vermont Electric Power Company (VELCO) maintain electric transmission lines in areas known to be used by Indiana bats. CVPS and VELCO manage the associated rights of way using the principles of Integrated Vegetation Management through the adoption, periodic update, and continuous application of vegetation management plans.

Issues of concern mainly relate to the removal of trees used by bats as roosting sites, and the loss of bat habitat by the removal of all woody vegetation within the cleared right of way. The removal of trees containing roosting bats can result in the killing of individual animals. The creation of excessively wide cleared spaces through conversion of forest cover to an area containing only herbaceous plants may create an effective barrier to the movement of bats. The following best management practices have been designed to minimize impacts in those areas of Vermont known to contain Indiana bats, and to make use of the Integrated Vegetation Management programs employed by Vermont electric utilities to manage and where possible enhance habitat quality.

In order to remain viable as habitat for Indiana bats, an area must contain both a sufficient number of roosting trees and acreage of contiguous and interconnected forest cover for foraging. Research suggests that Indiana bats will not cross openings greater than 50 - 100 feet in width that lack such cover. To readily travel across such openings, Indiana bats require cover in the form of woody vegetation approximately 6-*10* feet in height. Therefore, in order to avoid hindering bat movement, vegetation management activities should strive to maintain existing low-growing woody vegetation in the right of way.

In some cases, slight modifications or additions to normal vegetation management practices may improve both the quantity and quality of Indiana bat habitat.
Due to the location, quantity, and continuous management of electric transmission rights of way, the protection and enhancement techniques can provide uniquely valuable sites for monitoring and study of Indiana bats and Indiana bat habitat in Vermont. VFWD biologists, through careful cooperation with utility foresters, can design site-specific management and monitoring programs to assess the potential positive and negative effects of utility operations on bat survival.

To further the goals of state and federal regulations related to protection of threatened and endangered species in Vermont, and to take advantage of the unique opportunities presented by ongoing Integrated Vegetation Management programs within existing and future electric transmission rights of way, CVPS and VELCO agree to implement the following Best Management Practices (BMPs) in select identified locations that are likely to provide the maximum benefit for Indiana bat survival and study as determined by VFWD, avoid adverse impacts to Indiana bats, and be compatible with maintenance and reliability standards as determined by the utilities. It is recognized by all parties that implementation of these BMPs may be affected or restricted by emergency restoration activities, imminent threats to reliability, state and federal reliability standards, and easement or other property restrictions. CVPS and VELCO agree to implement the BMPs within the legitimate confines of such restrictions, and to act in good faith to minimize the impacts of emergency repair and restoration efforts on their successful and continuing application.

BEST MANAGEMENT PRACTICES

The following practices are grouped according to their intended purpose, and listed in order of preferred use. Where the application of a particular practice is not practicable due to physical, property, reliability, or regulatory constraints, utility managers will seek to use an alternative listed practice.

Protection of roosting Indiana bats during construction projects that involve the clearing of trees

The simplest and most effective method of protecting roosting individuals during clearing activities is to avoid the felling or removal of trees containing roosting Indiana bats. This can be accomplished through time-of-year restrictions that limit the removal of large trees to the period of time when Indiana bats are hibernating in caves and mines, or by site-specific assessments where such restrictions are not practical.

In order to avoid the taking of roosting individuals during construction projects:

- Perform tree removals only during the period between October 15 and April 15. If required for access, trees less than 8 inches diameter at breast height (dbh) may be removed and/or trimmed as needed, taking care to protect any larger trees.
- Where larger trees must be removed outside the allowed time period, the area of clearing should be assessed for the presence of potential roost trees (trees of suitable size, species, and height with peeling or loose bark capable of providing shelter for roosting bats) by a CVPS or VELCO employee trained in identifying such trees by the VFWD. If necessary, VFWD biologists may be assist in identifying potential roost trees on the project site. Potential roost trees should be marked prior to the commencement of clearing activities, and care must be taken to protect these trees and potentially roosting bats from damage during clearing activities.

- Potential roost trees protected during initial clearing activities may subsequently be removed as necessary, only during the period between October 15 and April 15. It is anticipated that sufficient roost trees are available within 2.5 miles of the project site to offset the loss of these potential, yet unconfirmed, roost trees.

Protection of foraging habitat and bat crossings during construction projects

In order to maintain existing foraging areas and adequate cover for bats to move across a maintained right of way, the following steps should be taken during construction projects:

- When available, compatible woody species should be retained where possible, with the following exceptions as appropriate in the judgment of the utility:
  - Areas needed to provide clearance for safe and efficient access; and
  - the "wire zone," which for the purposes of this plan is an area, centered on the pole structures and under the electrical conductors/communication wires, and which must be maintained free of woody vegetation for reliability and safety.
  - The removal of "danger trees" as those trees represent a strike hazard to the line due to defects and/or growth characteristics.
- Efforts to retain existing compatible woody vegetation should focus on areas where it can provide continuous cover at least 25 feet in width and at least 6 – 10 feet in height between the edges of the cleared right of way. Areas containing streams and wetlands are particularly valuable and should take precedence over upland areas where practicable.

Creation of foraging habitat and bat crossings during construction and maintenance projects

For certain construction projects VFWD may determine that it is appropriate to create new crossings, or enhance existing crossings, through the use of strategic plantings. In addition, utilities and VFWD may agree to the creation of new crossings within existing cleared rights of way. When creating new foraging habitat and bat crossings:

- Encourage existing compatible woody vegetation to create crossings, the length of which shall extend to both edges of the cleared corridor, with the exception of the "wire zone" as appropriate in the judgment of the utility.
- If existing vegetation is not suitable, crossings will be created by planting suitable woody vegetation, the length of which shall extend to both edges of the cleared corridor, with the exception of the "wire zone" as appropriate in the judgment of the utility.
- Plantings should consist of compatible woody species suitable for the site and consistent with maintenance requirements and reliability standards, and will be spaced in a manner to provide continuous cover between the edges of the right of way at maturity. Each crossing should be at least 25 feet in width and be

maintained at heights no less than between 6 – 10 feet. When feasible, crossings should be located along streams and wetlands.

- Crossings should be maintained as described in this plan until VFWD determines that they are no longer necessary for the protection of Indiana bats (within the limits of above-listed constraints associated with emergency work or routine vegetative management work to ensure compliance with reliability standards).

Creation/enhancement of roosting habitat during construction and maintenance projects

- For certain construction projects – particularly those involving new or expanded rights of way that may remove potential roost trees – VFWD may determine that it is appropriate to create or enhance new potential roosting sites through innovative management techniques. The utilities and VFWD may agree to the creation of new potential roosting sites within and along existing cleared rights of way. Creation of potential roost trees will generally be accomplished through the removal of crowns and limbs from identified trees along the outer edges of the right of way, encouraging the gradual creation of roosting cover as the trees die and bark begins to peel away. In addition, enhancement of potential roost trees can be accomplished through the "daylighting" of existing potential roost trees by removing adjacent trees. The daylighting practice is intended to increase solar radiation on the potential roost tree. Daylighting may require additional landowner permissions if tree removals are outside utility easements or beyond the scope of normal clearing and danger tree removal.

When creating potential roost trees:

- Roost tree candidates of appropriate diameters, species, and solar exposure should be identified and marked prior to commencement of clearing or widening activities.
- In the areas of roost tree creation, clearing and widening activities should begin with the removal of limbs and crowns, and/or girdling as appropriate. Trunks of marked trees should be left in place and cut to a height (i.e., no less than 10 – 12 feet) that allows and encourages use by roosting bats once the bark begins to separate from the wood, but in no case may the retained trunk be left at a height that would allow contact with wires, guys or poles, or blockage of access in the event of trunk failure. Trunks should be double girdled as appropriate to ensure that the tree dies and sheds the bark.

When enhancing (i.e., daylighting) potential roost trees (with landowner permission as required):

- Existing potential roost trees of appropriate diameters and species should be identified and marked prior to commencement of clearing or widening activities.

- Create small openings (on as many as three sides) adjacent to identified potential roost trees, leaving adequate canopy cover within 20 feet for bats to emerge into forest cover.

Ongoing research and monitoring of retained and newly-created habitat

CVPS and VELCO shall allow VFWD reasonable access within their rights of way to conduct scientific studies within habitat management areas (subject to any additional landowner or other permissions that may be required). Landowner approvals shall be obtained by the VFWD in coordination with the utility. Utility activities may require temporary interruption of studies and/or alterations of mitigation plantings. Disruptions shall be kept to the minimum required. CVPS and VELCO shall work with VFWD to re-establish ongoing research activities following necessary disruptions.

DATED at RUTLAND, VERMONT this 10th DAY of JUNE, 2011

VERMONT FISH AND WILDLIFE DEPARTMENT

By: _____

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Title: Commissioner VT Fish & Wildlife Dept

CENTRAL VERMONT PUBLIC SERVICE CORPORATION

By: _____

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VERMONT ELECTRIC POWER COMPANY

By: _____

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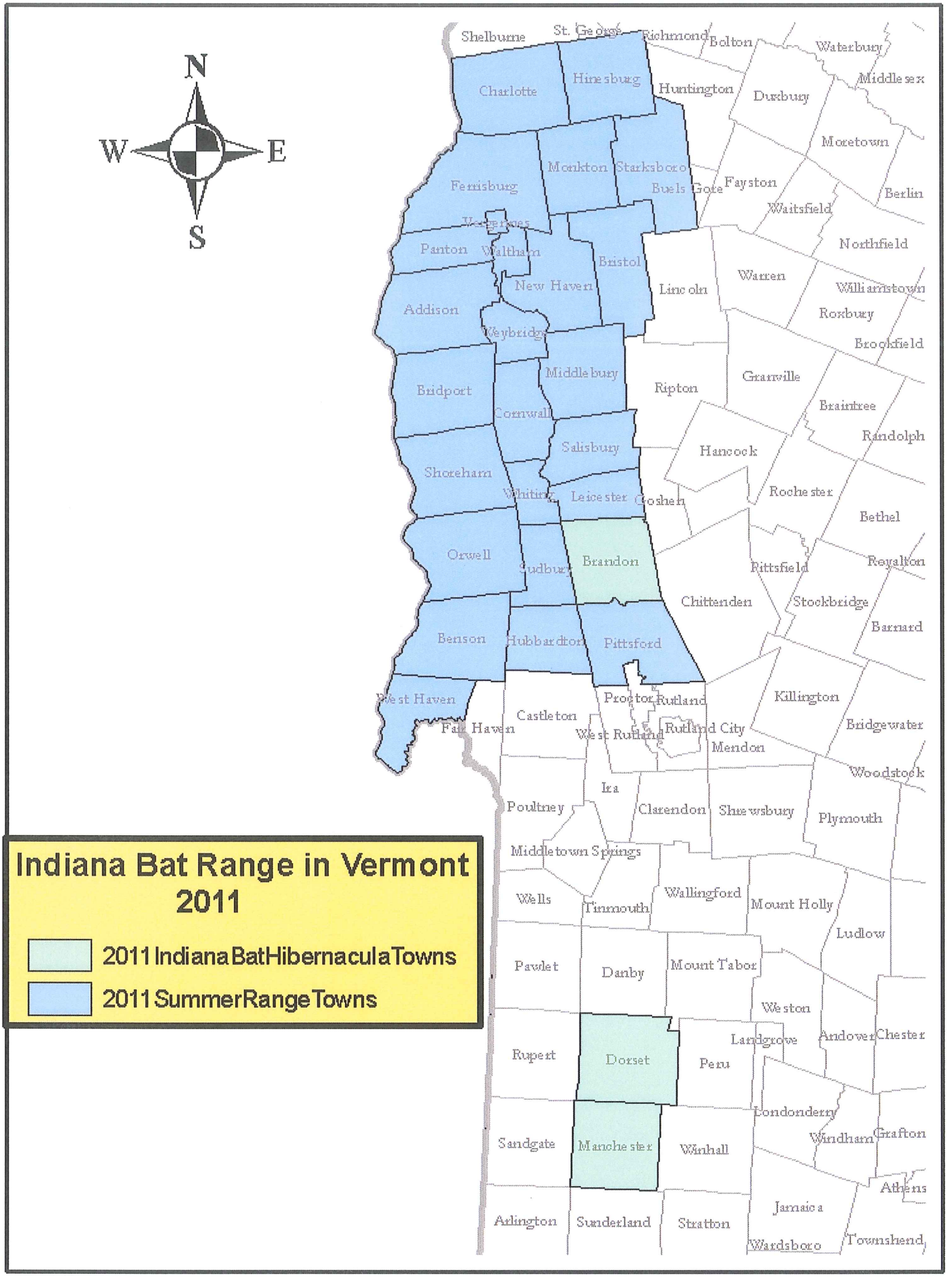
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Charlotte
Hinesburg
Indiana Bat Range in Vermont
2011
2011 Indiana Bat Hibernacula Towns
2011 Summer Range Towns